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# A FLIGHT INVESTIGATION OF BLADE-SECTION AERODYNAMICS FOR A HELICOPTER MAIN ROTOR HAVING NLR-1T AIRFOIL SECTIONS

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an evaluation of the supercritical wing in many configurations. The primary emphasis was placed on the transonic Mach number region, which is considered to be the principal air combat arena for fighter aircraft. An agility study was undertaken to assess the maneuverability of the F-111A

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UTTL: A flight investigation of blade section aerodynamics for a helicopter main rotor having NLR-1T airfoil sections

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# A FLIGHT INVESTIGATION OF BLADE-SECTION AERODYNAMICS FOR A HELICOPTER MAIN ROTOR HAVING NLR-1T AIRFOIL SECTIONS

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## SUMMARY

A flight investigation has been conducted using a teetering-rotor helicopter to obtain data on the aerodynamic behavior of main-rotor blades with the NLR-1T blade section. The data system recorded blade-section aerodynamic pressures at 90-percent rotor radius, vehicle flight state, performance, and loads. The test envelope included hover, forward-flight speed sweeps from 35 to 85 m/sec (68 to 165 knots), and collective-fixed maneuvers at about 56 m/sec (109 knots).

Flight-test data were obtained on apparent blade-vortex interactions, negative lift on the advancing blade in high-speed level flight, wake interactions in hover, and other phenomena. In many cases, good agreement was achieved between chordwise pressure distributions measured in flight and those predicted by airfoil theory. Most comparisons were made for a high-speed, level-flight condition with no apparent indications of blade-vortex interactions.

## INTRODUCTION

The continued development of airfoil technology offers the potential for improvements in the performance and loads characteristics of helicopter rotors (refs. 1 and 2). As indicated in references 3 to 11, methods of rotorcraft-airfoil design are still being improved. These methods are constrained by the assumption of two-dimensional, steady flow. In many parts of the typical helicopter operating envelope, blade sections are subjected to highly three-dimensional, unsteady flow (refs. 12 and 13). The degree of success with which rotorcraft-airfoil design technology can be applied depends on how well the airfoil design variables can be related to the complex flow environment of the rotor. Experimental studies on this topic are reported in references 8, 14, 15, and 16.

A flight investigation of rotor-airfoil characteristics has been conducted with a high-speed, teetering-rotor, AH-1G attack helicopter that used main-rotor blades with the NLR-1T airfoil. This airfoil was designed specifically to meet the rotorcraft-airfoil design criteria described in reference 4. The instrumented vehicle was flown in level flight up to 85 m/sec (165 knots) and in collective-fixed maneuvers at about .56 m/sec (109 knots). Data were obtained on performance, flight-state and control parameters, rotor loads and motions, and airfoil pressure distributions at 90-percent radius on one blade. Initial results of this investigation are presented in references 16 and 17. Detailed

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data on performance, loads, and blade motions for the NLR-1T blades are presented in reference 18. Baseline data for the same test vehicle with a standard, uninstrumented set of main-rotor blades are given in reference 19.

The NLR-1T flight-test program is complemented by other rotorcraft airfoil research. Wind-tunnel test data and analyses of the NLR-1 airfoil are given in references 6, 20, and 21. Flight-test data from other relevant rotorcraft research are presented in references 15 and 22 to 26. References 15 and 22 report on flight tests with new airfoil shapes gloved on blade tips; references 23, 24, and 25 contain results from AH-1G helicopter tests with instrumented standard blades. Relevant wind-tunnel tests of instrumented rotors are reported in references 27 and 28.

The purpose of this report is to present blade-section aerodynamic data for, and limited analysis of, significant flight-test conditions with the NLR-1T airfoil. That significance is determined in large part by the review of performance and loads data (ref. 18) obtained concurrently with the blade pressure data. The records of blade-section data in this report provide the basis for future analyses with other complementary data from references 18 and 24 or with results from computer programs for helicopter simulation. The data presented herein are intended to guide efforts to utilize the complete results.

## SYMBOLS

Positive senses of some axes, angles and accelerations are presented in figure 1.

$A_{0f}$ main-rotor collective pitch angle at 0.75R, commanded at swashplate, deg

$A_{0s}$ main-rotor collective pitch angle at 0.75R, measured at blade grips, deg

$A_{0,tr}$ tail-rotor collective pitch angle, deg

$A_{1f}$ main-rotor lateral pitch angle, commanded at swashplate, deg

$A_{1s}$ first harmonic of main-rotor lateral pitch angle, measured at blade grip, deg

$a$ speed of sound, m/sec

$a_{1s}$ first harmonic of main-rotor longitudinal flapping with respect to the mast, deg

$B_{1f}$ main-rotor longitudinal pitch angle, commanded at swashplate, deg

$B_{1s}$ first harmonic of main-rotor longitudinal pitch angle, measured at blade grip, deg

$b_{1s}$ first harmonic of main-rotor lateral flapping with respect to the mast, deg

$C_L{}'$ vehicle load coefficient, $\dfrac{W\,n_z}{\rho\pi R^2\,(\Omega R)^2}$

$C_p$ airfoil pressure coefficient, $\dfrac{p - p_\infty}{q_\infty}$

$C_p{}^*$ airfoil pressure coefficient corresponding to a local Mach number of 1.0

$C_Q$ main-rotor mast torque coefficient, $\dfrac{Q}{\rho\pi R^3\,(\Omega R)^2}$

c airfoil chord, m

$c_c$ airfoil chord-force coefficient, pressure only,
$\dfrac{1}{c}\displaystyle\int_{\text{thickness}} \left(C_{p,f} - C_{p,r}\right) dz$

$c_\ell$ airfoil lift coefficient, section lift/(qc)

$c_m$ airfoil pitching-moment coefficient about quarter chord, pressure
$\dfrac{1}{c}\displaystyle\int_{\text{chord}} \left(C_{p,\ell} - C_{p,u}\right)\left(0.25 - \dfrac{x}{c}\right) dx + \dfrac{1}{c}\displaystyle\int_{\text{thickness}} \left(C_{p,f} - C_{p,r}\right)\dfrac{z}{c}\,dz$

$c_n$ airfoil normal-force coefficient $\dfrac{1}{c}\displaystyle\int_{\text{chord}} \left(C_{p,\ell} - C_{p,u}\right) dx$

F function (See eq. (C-2).)

$F_c$ corrected function (See eq. (C-2).)

f frequency, Hz

$f_{3db}$ frequency for 3 db amplitude attenuation, Hz

g acceleration due to gravity, 9.81 m/sec$^2$

$\dot{h}$ climb rate, m/sec

$K$ ratio of effective to actual cutoff frequency

$K_n$ constants for z-transform equation, $n = 1, 2, 3$ (See eq. (C-2).)

$k_m$ incremental angle for incremental airfoil pressure, deg/Pa (See eq. (B-2).)

$M$ local Mach number perpendicular to blade leading edge

$M_h$ reference blade-tip Mach number, $\frac{\Omega R}{a}$

$m_1$ data channel sensitivity, measured units/mV

$m_2$ slope representing PCM electronic response, mV/digital increment

$n_x, n_y, n_z$ orthogonal set of load factors for aircraft center of gravity, g units

$p$ local static pressure at a point on airfoil, $P_a$

$p_f, q_f, r_f$ orthogonal set of fuselage angular rate, rad/sec

$p_\infty$ free-stream static pressure, $P_a$

$Q$ main-rotor mast torque, N-m

$q_\infty$ free-stream dynamic pressure of blade section, $P_a$

$R$ blade radius, m (ft)

$r$ radial distance to blade element

$s$ Laplace operator

$T$ period between samples of same channel of multiplexed data system, sec

$T_b$ blade temperature on upper surface at $x/c = 0.6$ and $r/R = 0.9$, C

$t$ time, sec; also, airfoil thickness, m

$t_d$ delay time due to electronic-induced lag, sec

$V$ aircraft true airspeed or velocity, m/sec (knots)

$W$ aircraft gross weight, N

$X,Y,Z$ orthogonal set of aircraft body axes (See fig. 1.)

$x$ airfoil abscissa, positive rearward from leading edge, m

$y$ airfoil ordinate, positive upward, m

$z$ transformation variable (See eq. (C-2).)

$\alpha_c$ rotor control-axis angle of attack, deg

$\alpha_e$ effective airfoil angle of attack (See eq. (B-2).), deg

$\alpha_f$ fuselage angle of attack, deg

$\beta_f$ fuselage angle of side-slip, deg

$\beta_s$ main-rotor, shaft-axis teeter angle, (where $\beta_s - a_0 - a_{1_s} \cos\psi - b_{1_s} \sin\psi$ ...) positive updard, deg

$\Delta D$ digital increment above value for zero pressure, counts

$\Delta h$ hub height above ground

$\Delta m_1$ change in $m_1$ per change in pressure-sensor temperature, $P_a$/counts - C

$\Delta p_o$ change in indicated pressure per change in pressure-sensor temperature, $P_a$/C

$\Delta p_t$ change in p due to temperature effect, $P_a$

$\Delta\psi_d$ azimuthal lag due to electronic lag

$\theta_f$ fuselage pitch attitude, deg

$\theta_s$ main-rotor, shaft-axis blade pitch at 0.75R, (where $\theta_s = A_0 - A_{1_s} \cos\psi$ $B_{1_s} \sin\psi$ - ...), measured at blade grip, deg

$\mu$ tip-speed ratio, $V/(\Omega R)$

$\rho$ mass density of air, kg/m$^3$

$0_f$ fuselage roll attitude, deg

$\psi$ main-rotor blade azimuth angle measured from downwind position in direction of rotor rotation, deg

$\Omega$ main-rotor rotational speed, rad/sec

$\omega_c$ cutoff frequency (See eq. (C-1).), Hz

Subscripts

| | |
|---|---|
| a | above reference temperature |
| b | below reference temperature |
| c | mean line |
| f | forward surface |
| | lower surface |
| te | trailing edge |
| u | upper surface |
| 5h | fifth harmonic value |

## EQUIPMENT AND PROCEDURES

### Test Vehicle

The test vehicle was the instrumented AH-1G attack helicopter shown in figures 2 and 3. Physical characteristics of the vehicle are given in Table I. The teetering-hub main rotor was similar to the standard production configuration except for blade construction, airfoil section, and some structural-dynamic blade properties. Compared to standard blades, the NLR-1T blades did have identical planform, twist, and root-end fittings. However, the new blades were built with the NLR-1T airfoil contour from about 31-percent blade radius to the tip. One of these blades was instrumented to measure bending loads, internal temperatures, and aerodynamic pressures at one spanwise station. Details of blade design and other vehicle features may be found in reference 18.

### Airfoil

The NLR-1 airfoil was developed to satisfy multiple design points derived for a helicopter rotor in hover, maneuvers, and high-speed flight. This work is described in references 4 and 6. Using hodograph-plane variables, a computer program produced a shock-free profile for the transonic design point (ref. 29). A program for analyzing airfoil aerodynamics in subcritical flow was then used to assess the effects of modifications to the initial contours. These modifications were aimed at satisfying the lower-speed design criteria of reference 4. The final shape was designated as the NLF7223-62 or, more simply, the NLR-1. The NLR-1T was obtained by truncating the NLR-1 at 99-percent chord to produce a finite-thickness trailing edge. NLR-1T coordinates are listed in Table II and presented graphically in figure 4. Noteworthy features are the far-forward location of the positive camber and the reflex camber at the trailing edge. Figure 5 presents a comparison of the nominal contour and the profile achieved at the spanwise location where pressure measurements were made.

Wind-tunnel data indicated that most of the aerodynamic objectives of the design were not met (refs. 6, 20, and 21). Maximum lift at a Mach number of 0.4 was limited to about $c_l$ = 1.1 by trailing-edge separation. The drag-divergence Mach number at zero lift was determined to be approximately 0.84, about 0.01 below the design criterion. In contrast, the low-lift, low Mach number values of pitching-moment coefficient ranged from -0.01 to -0.02 which are within the design constraints.

## Data System

Data from fuselage-mounted sensors were acquired with the Piloted Aircraft Data System (PADS) described in reference 19. These sensors measured flight-state parameters, control positions, and some rotor and engine parameters. Detail of the PADS sensor system are given in Table III. PADS electronics used a 10-bit data word, a sampling rate of 80 samples per second per channel, and pulse-code modulation (PCM) for digitization. PADS-PCM data channels were multiplexed and recorded on a single tape track.

Data from rotor-mounted sensors were processed by the digital Special Rotor Blade Instrumentation (SRBI) system of reference 30. This provided 30 channels with 8-bit data words (without parity) and a sampling rate of 1000 samples per second per channel. Data signals for rotor loads, teeter angle, blade pitch angle, blade azimuth angle, and canister temperature were processed in the mast-mounted canister shown in figure 6. This set of channels is described further in reference 18. Airfoil pressures were sensed by 13 pressure transducers located at 90 percent of rotor radius. Electronics mounted in the blade tip digitized and multiplexed signals for both the blade-section pressures and blade temperature. This data and the canister-processed data were merged and recorded on a single tape track. Photographs and a schematic of elements of the SRBI system are presented in figures 6 to 10. Some of the equipment used to perform a preflight blade-pressure calibration are shown in figure 11. Appendix A and Tables IV and V provide a more detailed description of the pressure data system.

## Data Reduction

The pressure-transducer records were processed to produce local pressure and blade-section coefficients for every two degrees of azimuth within each selected rotor revolution. Corrected, dimensional values of local blade-section pressures were nondimensionalized with other data from the PADS and SRBI systems. These results were integrated (using the methods of ref. 31) to yield normal-force, chordwise-force, and pitching-moment coefficients. (Details of the data reduction are given in Appendices B and C). The standard data-reduction process also yielded loads data for the same rotor revolution (ref. 18).

## Flight-Test Procedures

Flight tests were conducted to obtain data in straight and level flight and in maneuvers. Steady, level-flight speed sweeps were accomplished, usually in 5 m/s (10 knot) increments, from about 35 to 85 m/s (68 to 165 knots). This range

of speeds corresponds to tip-speed ratios from about 0.15 to 0.37. Maneuvers were flown with a nominal tip-speed ratio of 0.25 and with the collective pitch set for trim at that speed. The corresponding airspeed is 56 m/sec (109 knots). The symmetrical pull-ups and constant-airspeed descending turns were flown with normal-load factors up to 2.3. The tests also include representative periods of hover and of linear climb and descent.

Emphasis was placed on achieving well-controlled, standardized test-point conditions to allow direct comparison between data sets for the different experimental rotors. Operating rotor speed and longitudinal center of gravity were maintained very close to nominal values and the external configuration of the aircraft was kept the same for the tests of all three experimental blade sets (ref. 16). Data were acquired only when air turbulence levels were acceptably low.

## DISCUSSION OF RESULTS

Aerodynamic blade-section data are presented in figures 12 through 49 and in Appendices D and E. Table VI provides a guide to test-point conditions for the data in the appendices. Analysis of the data presented is limited to providing a suitable background for detailed analyses and comparative studies. The topics for the following discussion include: data interpretation; results for level flight, hover, and maneuvers; and a comparison of flight data with calculated results from airfoil theory.

The interpretation of the blade-section data should be guided by several considerations. First, test conditions were limited; the disk loading was low, and the maneuvers were flown at one target airspeed. Second, pressure coefficients are the most accurate form of blade-section data for any test point. Normal-force and pitching-moment coefficients required additional data reduction and are most useful on a comparative basis to guide detailed analysis of the pressure distributions. Third, the accuracy of each type of blade-section coefficient data is a complex function of azimuth position, tip-speed ratio and other test-condition parameters (Appendices B and C).

Another important consideration is the steadiness of a test-point condition and its effect on the data. Steadiness is significant because each set of data is unique for a single rotor revolution. There was no averaging of results for a series of revolutions. Figure 12 shows that pressure histories appear to be highly repetitive for level flight. Figure 13 confirms this with a comparison of airfoil coefficient data for several rotor revolutions. The data of figures 14 and 15 show that descending turns produce repetitive, periodic records, whereas the wave forms change as a function of time for symmetrical pull-ups.

The loads and performance data acquired concurrently in the same flight investigation (ref. 18) can be used to guide the study of the test results on blade-section aerodynamics. At each selected test point, all types of rotor data (rotor loads and aerodynamics included) were fully reduced, and listings were generated. Many of the data points of reference 18 have complementary sets of blade-section data listed in Appendices D and E.

## Level Flight

Typical conditions. - Level flight data are reviewed first by concentrating on results for three values of tip-speed ratio achieved in one speed-sweep flight. Figure 16 presents a comparison of the behavior of both normal force and pitching moment through the full range of rotor azimuth. (The product of an airfoil coefficient and Mach number squared is directly proportional to the dimensional load acting on the blade section.) The significantly different patterns of loads at the three flight conditions are produced by different phenomena. The abrupt changes in $C_nM^2$ at $\psi = 70^o$ and $270^o$ for $\mu = 0.15$ indicate blade-vortex interactions similar to those of references 24 and 32. The major changes in both $C_nM^2$ and $C_mM^2$ near $\psi = 90^o$ or $\mu = 0.37$ indicate the significant effect of compressibility on the advancing blade.

More details of blade-section behavior are evident in the pressure-coefficient data of figure 17. Results for $\mu = 0.15$ show the strong influence of apparent blade-vortex interactions by the fluctuations of pressure coefficients near the leading edge (refs. 25, 33, and 34). The magnitude of these fluctuations in the first quadrant appear relatively small because the local pressure is nondimensionalized by a larger value of local dynamic pressure. Data for the intermediate-speed case also show that most of the variation in pressure coefficient occurs in the front of the blade section (fig. 17(b)). The high-speed data of figure 17(c) give clear examples of compressibility effects in the records for both upper and lower surfaces. The most prominent compressibility feature is the upper-surface pressure peak for 2-percent chord at an azimuth angle of about $230^o$.

The relationship between the compressibility features and supercritical flow is illustrated in figure 18. This figure presents some details of data for the high-speed case of figure 17(c). Chordwise pressure distributions for two azimuth positions are given in figures 18(a) and (b); pressure-coefficient records for two transducers are given in figure 18(c). The points labeled A and B in figure 18(c) are cited as being effected by supercritical flow. The corresponding points in the pressure distributions substantiate this. (The local pressure coefficients are more negative than that for sonic flow.)

The relative significance of the local supercritical flow is suggested in the calculated supersonic-flow boundaries of figure 19. Figure 19(a) corresponds to the flow conditions of figure 18(a) and shows substantial regions of supercritical flow. Figure 19(b) corresponds to the flow conditions of figure 18(b); it indicates that the small supercritical-flow region for the high-lift coefficient case is probably insignificant, even though it produces a prominent peak in figure 18(c).

Speed-sweep results. - The change in character of blade-section aerodynamic characteristics during a speed sweep is illustrated by the data of figure 20. (As noted before, the nondimensionalizing factors for the coefficient data are themselves functions of azimuth, and variation of blade-section Mach number with blade azimuth also changes with tip-speed ratio.). The data show the following trends:

1. Typical results of apparent blade-vortex interaction are clearly observable at the lowest tip-speed ratios. These are apparent in the data for both normal-force and pressure coefficients.

2. Negative normal-force and, consequently, negative lift are generated in the second quadrant at 90-percent rotor radius for tip-speed ratios above approximately 0.3. This means that two significant vortices should trail from the outer part of the blade: the one from the down-loaded tip could be ingested into the top of the first quadrant of the rotor disk.

3. Supercritical pressure peaks appear at high tip-speed ratios at the leading edge: in the third quadrant on the upper surface (fig. 20(c)) and the second quadrant on the lower surface (fig. 20(d)).

Variations of blade-section airfoil coefficients with local Mach number are presented for several tip-speed ratios in figures 21 and 22. The local Mach number due solely to blade rotation at 90-percent rotor radius is about 0.63 for this data. Apparent blade-vortex interactions are evident at about M = 0.5 for the lowest tip-speed ratios. At moderate-to-high values of tip-speed ratio, the traces of normal-force coefficient and Mach number form a characteristic, double-looped shape. The pitching-moment coefficients also produce a characteristic shape: retreating-blade flow produces a small loop or series of loops at about $c_m = 0.0$ at the lowest Mach numbers and a second large loop shows a wide range of moment-coefficient values at the highest Mach numbers. Figure 22 indicates the envelope of the measured operating conditions for the instrumented blade section during one speed sweep.

Rotor disk loading. - Representative data in figure 23 show the expected effect of variations in rotor disk loading. Decreased levels of vehicle load coefficient result in decreased levels of normal-force coefficient at 90-percent rotor radius. The largest decreases appear at the low-speed, retreating-blade side of the disk. The high-speed data show some significant changes in pitching-moment coefficient for the advancing-blade side of the disk.

## Hover, Descents, Turns, and Pull-ups

Flight data for test conditions other than level flight are reviewed briefly. The data are intended to illustrate trends and identify regions of interest.

Hover. - Representative hover data are presented in figures 24 through 27. Figure 25 shows the typical fourth-quadrant disturbances that can be attributed to tail-rotor effects. Test-point steadiness can be considered with the data of figure 26; some effects of rotor thrust and trim are shown in figure 27. All of the figures demonstrate that very slight winds, typical trim variations, and tail-rotor effects can produce significant variations from the perfectly steady conditions assumed in most hovering-rotor analyses.

Descent. - Some data for descent conditions are shown in figure 28. These data indicate that the change from level flight to descent affects not only the

level of blade-section normal-force required, but also the severity of blade-vortex interactions.

Maneuvers. - Most of the data on blade-section aerodynamics for maneuvering flight were obtained near $\mu$ = 0.25 and are presented with reference data for level flight. Figures 29 and 30 have typical level-flight data in the figure formats which will be used for subsequent data presentation. Those level flight conditions are chosen as reference conditions because the maneuver data were obtained at approximately the same tip-speed ratios and have the same variation of Mach number with blade azimuth position.

Data for descending turns are given in figures 14 and 31 to 34. Figure 32 shows that more normal force (at 90-percent radius and most azimuth angles) is required in the turn than level flight. The numerous inflection points in the first-quadrant left-turn data indicate apparent blade-vortex interactions. Another point of interest in figures 32 and 34 is the reduction in the second-quadrant amplitude of pitching moments at conditions for higher values of vehicle load coefficient. This agrees with observations (ref. 18) that vibration levels could actually decrease with increased load factor during some maneuvers.

Data on symmetrical pull-ups are presented in figures 15 and 35 through 39. The data of figure 39 show that achievement of the test point requires a significant increase in blade-section normal forces over those for level flight; the data also show that blade-section operating conditions have changed noticeably from the pull-up test point to a point occurring later in the maneuver.

Figure 40 presents maneuver data for test points that did not meet the standard criteria for test-point condition. These data illustrate the extent to which the coefficients for left and right turns can differ at lower tip-speed ratios. Substantial amounts of supercritical flow are indicated.

## Comparison of Flight Data With Theory and Wind-Tunnel Data

The effect of the rotor environment on blade-section aerodynamics can be studied by comparing flight data with both wind-tunnel data and theory for airfoils in two-dimensional, steady flow. The wind-tunnel data used herein was obtained from reference 20. Additional unpublished data are also used. The Reynolds numbers for both wind-tunnel tests were close to those for flight. The theoretical results were obtained with the transonic airfoil-analysis program described in reference 35. Appendix F provides details of this application of the computer program. The comparisons are developed using both airfoil coefficients and pressure distributions.

Comparisons of airfoil pitching moment based on three level-flight conditions are presented in figures 41 and 42. Values of pitching-moment coefficient for flight, wind-tunnel test, or theory are based on common conditions of Mach number and normal-force coefficient. The scale of the moment data has sufficiently fine increments to show clearly the small, but potentially signif-

icant differences in the curves. These differences can be attributed to several causes: rotor-flow effects in the flight data; accuracy of the two-dimensional, steady-flow tunnel data; limitations of the airfoil theory; and the combined effects of accuracy and precision in the comparisons. These figures demonstrate that both force and moment characteristics for blade sections in a real rotor environment cannot be predicted to a high degree of accuracy using airfoil data obtained under simplified flow conditions.

Data for the high-speed case of figure 42 were selected for further consideration. Details of the data for that flight data are given in the listings for run 11 of flight 63 in Appendices D and E. This flight point was selected as having both a wide range of flow conditions and minimal indications of blade-vortex interactions.

Comparisons of chordwise pressure distributions for flight, wind-tunnel, and theory are given in figure 43. The wind-tunnel data for this figure consist of unpublished, absolute-pressure measurements (which allow a more meaningful comparison). The agreement between the flight and the wind-tunnel results appears good for the three cases considered. The agreement between flight data and theory is generally good except for figure 43(b); in that comparison, the most prominent difference is the strength and location of the upper-surface shock. In addition, figure 43 shows that small differences in the pressure distributions, primarily in the leading-edge and trailing-edge region, may contribute much to the differences in pitching-moment coefficient between flight data and theory.

The comparison of flight measured pressure distributions with theory may be extended over a wider range than with wind-tunnel data since theoretical methods allow a better matching of the flight Mach number and lift. Figure 44 presents comparisons between flight data and airfoil theory (ref. 35) at numerous blade azimuth angles for run 11 of flight 63. In most cases, the agreement is very good. Poorer agreement occurs between $\psi = 50^{\circ}$ and $80^{\circ}$ and between $\psi = 130^{\circ}$ and $140^{\circ}$. At the lower azimuth angles, theory overpredicts the strength of lower surface suction peak and predicts a strong upper-surface shock evident in the flight data. At $\psi = 140^{\circ}$, the lower-surface agreement of theory with flight data is comparatively poor at 20-and 50-percent chord.

Figures 45 through 49 present the results of several brief studies of factors that could influence agreement between flight data and the theoretical predictions. Figure 45 indicates that prediction of the upper-surface shock location is not a problem at $\psi = 70^{\circ}$ until the aircraft reaches $\mu = 0.33$. Studies of the $\mu = 0.37$ case examined the effects of airfoil contour definition on the theoretical pressure distributions. Typical results (fig. 46) indicate only that the program is very sensitive to the smoothness of input airfoil coordinates. Even with evaluations at other test conditions, no further conclusions could be drawn about the effect of contour tolerences. Next, the computer program was modified to account for yawed flow by the appropriate thinning of the airfoil section and an increase of the free-stream Mach number. As indicated in figure 47, this simplified method produced a negligible change at $\psi = 70^{\circ}$. Results of similar computer-program studies for $\psi = 140^{\circ}$ are presented in figures 48 and 49. Other, unillustrated results showed no significant improve-

ment in pressure-distribution agreement at $\psi = 70^{0}$ and $140^{0}$ when the computer-program inputs were altered to account for accuracy limitations in the Mach numbers, normal-force coefficients, and other relevant parameters of the flight data.

Pressure distributions may also be affected by phenomena that are beyond the scope of this report. Blade boundary-layer complexities, such as separation and rotor-wake effects could be important. Another relevant phenomenon is the unsteady Mach number effect cited in reference 36. The more complex treatment of three-dimensional transonic flow in reference 37 suggests another potentially significant effect.

In general, the present study indicates that viscous two-dimensional transonic airfoil theory for steady flow yields a good approximation of blade-section pressure distributions provided that the operating conditions (Mach number and either lift, normal force, or angle of attack) are well defined, and that local blade-vortex interactions are minimal.

## CONCLUDING REMARKS

A flight investigation has been conducted with a teetering-rotor helicopter to obtain data on the aerodynamic behavior of main-rotor blades having the section contour of the NLR-1T airfoil. Chordwise pressure distributions at 90-percent rotor radius and the flight state of the rotor were measured.

Results show a wide variety of aerodynamic operating conditions for the instrumented blade section. Data are presented on apparent blade-vortex interactions, blade-section negative lift at high Mach numbers, and a variety of compressibility effects. Good agreement was achieved between most pressure distributions from flight and those from theory that assumes steady, two-dimensional, viscous, transonic flow. The primary comparisons were limited to a flight condition with no obvious effects of blade-vortex interaction or unsteady effects. Apparent blade-vortex interactions affected the measured chordwise pressure distributions by introducing disturbances that were significant over the forward portion of the blade section.

## APPENDIX A. - SRBI PRESSURE DATA SYSTEM

### Sensors and Installation

Each of the 13 pressure transducers was mounted to give accurate readings of aerodynamic pressure at a point on the surface of the instrumented blade. The sensing element of each absolute-pressure transducer consisted of a very short, strain-gauged, sealed can with a 0.64-cm diameter; the can was bonded to a plate. As indicated in figure 7, two posts that projected from the inner surface of the cover plate located and secured both the transducer plate and rubber mounting pad. Mounting pads and spacers for the posts were adjusted to hold the transducer assembly without transmitting structural loads. (This was verified in the blade loads calibration). The cover plates were secured and the cavities sealed so that the transducer responded only to external pressure applied through a 0.8-mm orifice in each cover plate. The surface at 90-percent rotor radius was then faired and smoothed before the contour was measured. Tests on sample blade segments indicated that local pressures, in the range measured in flight, produced no measurable local deformation. Typical transducer installations are shown in figures 8 and 9.

The frequency response of the typical installed transducer was flat within 0.6 percent of the excitation pressure level up to 200-Hz frequency. The uninstalled transducer had a resonant frequency of about 23,000 Hz. Each transducer was tested as installed because the shape and volume of the cavities were not identical. Results showed that the value of resonant frequency for the installed units ranged between 800 and 900 Hz.

Temperature and acceleration effects were also evaluated. Transducer installation, which oriented diaphragm approximately parallel to the rotor disk, reduced centrifugal and Coriolis effects to negligible levels. Laboratory tests showed that steady-state acceleration perpendicular to the diaphragm produced less than 10 Pa response per g unit. Flight tests with transducers in competely sealed cavities indicated that all acceleration and vibration components produced negligible effects on the pressure data. Laboratory calibrations determined values for temperature sensitivity and zero shifts for each transducer. Blade temperature was measured in the pressure-transducer cavity at 60-percent chord on the upper surface. An exploratory flight was made with a second thermistor temporarily located on the upper surface at 10-percent chord; the resulting data indicated that the standard, rearward sensor gave reasonable values. The temperature sensed at 60-percent chord was utilized subsequently in applying corrections for all blade sensors. Although sources of viscous heating, convective cooling, and structural heating could not be uniformly distributed, blade temperature gradients appeared to be mild; possibly this was due to the conductivity of the aluminum substructure and the insulating properties of the covering honeycomb and fiberglass.

### Pressure-Data Electronics

SRBI signal conditioning for the pressure and blade temperature sensors was located on an electronics board mounted in a cavity on the lower surface at

the blade tip (fig. 11.) Short leads carried the analog pressure-data signals from each sensor to the pressure-data electronics. The electronics produced multiplexed PCM signals that were sent to a terminal at the blade root and from there to the mast-mounted canister. The proper airfoil coordinates were maintained by fairing in the electronics-board cover plate and routing all leads beneath the honeycomb.

## Preflight Calibration

Both pressure and temperature sensors were laboratory calibrated, and the entire pressure system was calibrated before each flight. The fixture shown in figure 11 was clamped over the 90-percent blade radius prior to each flight. Three levels of pressure were applied: ambient, 96.53 kPa (14.00 psi) and 62.05 kPa (9.00 psi). Pressure was measured by a gauge located in series with the vacuum pump; suction was applied simultaneously to all cavities through manifolds in each block of the fixture. Flexible sealing material on each block assured an adequately tight fit. Static check-calibrations gave highly linear, repeatable results. Each preflight calibration determined the sensitivites and zeros for the pressure system for that flight.

## APPENDIX B. - PRESSURE DATA REDUCTION

The data-reduction process operated on all of the data obtained for each designated test-point time. A computer program processed all the flight data. First it reduced flight-state and other data from the PADS records for one point in time; it then reduced data for blade-section aerodynamics and blade loads for the rotor revolution containing that time. Many of the data sets of reference 18 provide results for test points listed in this report.

Values of corrected, dimensional pressure were computed for each pressure transducer for every two degrees of rotor azimuth. Temperature effects were corrected by the method of reference 30 and using the constants given in Table V. The time for each channel was incremented to account for multiplexing. Time was also adjusted for the lag introduced by the response dynamics of the pressure system (Appendix C and Table V). Simultaneous sets of pressure data for all 13 transducers were computed by using linear interpolation between the measured, corrected data points.

These data were converted to nondimensional pressure coefficients. Rotor azimuth and rotational speed were required from SRBI data; true airspeed, air density, and static pressure were obtained from PADS data. The nondimensionalizing values of blade-section dynamic pressure were calculated for the flow component normal to the blade leading edge; yawed flow was not considered. The accuracy of the resulting pressure coefficients varies with rotor azimuth and tip-speed ratio, both of which affect local dynamic pressure.

Airfoil force and moment coefficents were obtained using the integration methods of reference 31. The set of required inputs for those methods consists of the pressure-coefficient values, locations of the pressure orifices, Mach number, trailing-edge pressure coefficient, and leading-edge stagnation point. Empirical relationships for the latter two items were developed with wind-tunnel data, such as from reference 20, and with results from airfoil-analysis computer programs of references 35 and 38. The required value of trailing-edge pressure coefficient was computed from the following empirical equation:

$$C_{p,te} = 0.1 + 0.25M \qquad \text{(B-1)}$$

As in reference 31, stagnation point was determined as a function of effective angle of attack. That angle was calculated as a function of Mach number and differential-pressure coefficient for 10-percent chord as follows:

$$\alpha_e = -1.84^\circ + 1.26\ M + k_m\ (C_{p,\ell} - C_{p,u})\Big|_{\frac{x}{c} = 0.10} \qquad \text{(B-2)}$$

where $k_m$, a function of Mach number, is simply related to lift-curve slope. (This empirical expression reflects the utilization of available data.).

Tables were used to compute values of x/c and y/c associated with the effective angle of attack. Figure 50 presents plots of these tabulated values.

Some effects of the curve-fit and integration method of reference 31 can be observed in figure 51. The automated curve-fit method operated with values of $C_p \sqrt{x/c}$ given as function of $\sqrt{x/c}$. Figure 51 presents sample cases of flight data with the computer-generated curve fits for both the new and a conventional coordinate system. The area between the upper- and lower-surface curves for either plot is equivalent to normal-force coefficient. The method of reference 31 has the advantage of achieving a good fit for steep suction peaks at the airfoil leading-edge (fig. 51(d)). In some cases, such as shown in figure 51(a), the low number of pressure transducers may have degraded the potential for accurate pressure-field representation with the curve-fit routine.

## APPENDIX C. - CORRECTIONS FOR THE DYNAMIC-RESPONSE CHARACTERISTICS OF THE PRESSURE-DATA SYSTEM

Dynamic-response characteristics of the SRBI pressure-data system produced some distortions in the data records. As in most systems, the primary criterion for judging these characteristics is the 3db or cutoff frequency (the frequency of a sinusoidal input signal which produces 3db attenuation). Although reference 30 indicated that the cutoff frequency was 200 Hz for pressure data, the actual values were determined to be less (Table V). Various correction techniques were evaluated, and the frequency content of the data records was reviewed. As a result, a simple time-lag correction was determined to be appropriate.

Initially, the z-transform method was evaluated because it was the most promising means of correcting both phase and amplitude effects on the digital records (ref. 39). A first-order interpolator, representing the digital sampling of a continuous system, was combined with a compensating network to yield the following Laplace equation:

$$\frac{\text{Output}}{\text{input}} = \frac{e^{sT}}{T}\left(\frac{1 - e^{sT}}{s}\right)^2 \left(\frac{s + \omega_c}{\omega_c}\right)\left(\frac{K\omega_c}{s + K\omega_c}\right) \qquad \text{(C-1)}$$

where T is the sampling increment in seconds, $\omega_c$ is the cutoff frequency, and K is the ratio of effective to actual cutoff frequency. When the substitution of $z = e^{sT}$ is made, the time-domain result is given as:

$$F_c(t) = \frac{K_1}{TK\omega_c} F(t) + \frac{K_2}{TK\omega_c} F(t - 1) + K_3 F_c(t - 1) \qquad \text{(C-2)}$$

where t is time, F and $F_c$ are uncorrected and corrected responses, respectively, and the other constants are:

$$K_1 = K\,(1 - K_3 + T\omega_c) - 1 + K_3$$

$$K_2 = K\,(K_3 - 1 - T\omega_c K_3) + 1 - K_3$$

$$K_3 = e^{-K\omega_c T}$$

This approach was evaluated with an input function of a unit-amplitude cosine wave with frequencies between 10 and 200 Hz. The output functions were harmonically analyzed, and the resulting coefficients are shown in figure 52. The solid line is the adjustment required if the system was purely analog. The zero-order hold method over-compensated, but the first-order hold version of the Markel method (ref. 39) appeared to give good results.

Processing of data for selected time segments led to the selection of a simple lag correction. Figure 53 presents fairly active data records with and without processing by a z-transform compensating network; that figure also permits a comparison between the compensated data and a 12-harmonic reconstitution of that curve. The results of this and other studies show that the frequency content of the data is not sufficiently high to warrant more than a lag correction. Such a correction is consistent with the constant-delay analog filters used in the SRBI pressure system.

The delay time for each channel was calculated with the following equation:

$$t_d = -(2\pi f)^{-1} \tan^{-1}(f/f_{3db}) \qquad \text{(C-3)}$$

where f is the input frequency, $f_{3db}$ is the cutoff frequency and the arc tangent is expressed in radians. The resulting values are given Table V. The phase angle shift may also be expressed as a function of harmonic frequency for the test-vehicle rotor. Figure 54 presents a comparison between results for the constant-delay approximation used in data reduction and the delay of equation (C-2).

## APPENDIX D. - AIRFOIL PRESSURE COEFFICIENT DATA

Computer-generated listings of airfoil pressure coefficient data are identified in terms of flight number, run number, and time. Also given are tip-speed ratio (MU), vehicle load coefficient (CLP), and blade temperature (TEMP(U60)). One column of pressure coefficient data is given for each pressure orifice location, as designated by a value of x/c (X/C). No value is given for the 35-percent-chord, upper-surface location due to instrumentation lead problems.

The data of Table VI serves as a guide for the contents of this appendix.

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/10/12.

FLT 61 RUN 26B TIME 55556.200 MU= 0.000 CLP= .00339 TEMP(U60)= 12.7 C = 54.82 F

| X/C= | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 0. | -.331 | -.772 | -.490 | | -.292 | -.258 | -.125 | .060 | .214 | .018 | -.056 | -.079 | -.038 | -.036 |
| 2. | -.328 | -.761 | -.488 | | -.292 | -.258 | -.125 | .065 | .211 | .018 | -.063 | -.086 | -.038 | -.040 |
| 4. | -.313 | -.761 | -.489 | | -.291 | -.259 | -.131 | .067 | .194 | .016 | -.072 | -.089 | -.038 | -.048 |
| 6. | -.301 | -.761 | -.488 | | -.291 | -.259 | -.138 | .062 | .180 | .002 | -.077 | -.096 | -.045 | -.048 |
| 8. | -.297 | -.761 | -.488 | | -.290 | -.268 | -.138 | .062 | .176 | -.000 | -.083 | -.098 | -.048 | -.048 |
| 10. | -.282 | -.761 | -.488 | | -.290 | -.273 | -.138 | .063 | .163 | -.013 | -.085 | -.098 | -.049 | -.049 |
| 12. | -.272 | -.761 | -.490 | | -.300 | -.273 | -.138 | .063 | .163 | -.013 | -.085 | -.098 | -.049 | -.049 |
| 14. | -.266 | -.762 | -.490 | | -.304 | -.272 | -.138 | .068 | .162 | -.014 | -.088 | -.099 | -.048 | -.048 |
| 16. | -.257 | -.761 | -.488 | | -.304 | -.272 | -.138 | .070 | .163 | -.013 | -.088 | -.099 | -.048 | -.047 |
| 18. | -.257 | -.769 | -.490 | | -.302 | -.273 | -.138 | .073 | .156 | -.013 | -.085 | -.108 | -.048 | -.048 |
| 20. | -.257 | -.776 | -.490 | | -.292 | -.272 | -.138 | .071 | .145 | -.014 | -.088 | -.099 | -.048 | -.048 |
| 22. | -.257 | -.776 | -.491 | | -.304 | -.272 | -.138 | .070 | .145 | -.014 | -.088 | -.099 | -.048 | -.047 |
| 24. | -.257 | -.776 | -.502 | | -.304 | -.272 | -.138 | .070 | .145 | -.014 | -.088 | -.108 | -.048 | -.047 |
| 26. | -.249 | -.776 | -.502 | | -.304 | -.272 | -.138 | .070 | .145 | -.014 | -.088 | -.108 | -.048 | -.047 |
| 28. | -.242 | -.776 | -.501 | | -.304 | -.285 | -.138 | .070 | .145 | -.014 | -.088 | -.108 | -.048 | -.047 |
| 30. | -.251 | -.786 | -.500 | | -.304 | -.272 | -.138 | .070 | .146 | -.013 | -.088 | -.108 | -.048 | -.047 |
| 32. | -.257 | -.790 | -.501 | | -.303 | -.273 | -.138 | .073 | .145 | -.013 | -.085 | -.108 | -.048 | -.048 |
| 34. | -.257 | -.789 | -.499 | | -.304 | -.272 | -.138 | .071 | .146 | -.013 | -.087 | -.108 | -.048 | -.048 |
| 36. | -.257 | -.789 | -.500 | | -.302 | -.275 | -.138 | .074 | .157 | -.013 | -.085 | -.108 | -.049 | -.048 |
| 38. | -.257 | -.790 | -.501 | | -.303 | -.286 | -.138 | .074 | .151 | -.013 | -.086 | -.108 | -.048 | -.049 |
| 40. | -.257 | -.789 | -.500 | | -.303 | -.286 | -.138 | .070 | .146 | -.013 | -.087 | -.108 | -.048 | -.047 |
| 42. | -.257 | -.803 | -.506 | | -.303 | -.286 | -.138 | .074 | .145 | -.013 | -.086 | -.108 | -.048 | -.049 |
| 44. | -.257 | -.804 | -.513 | | -.308 | -.286 | -.138 | .070 | .159 | -.014 | -.088 | -.108 | -.048 | -.047 |
| 46. | -.257 | -.804 | -.513 | | -.312 | -.286 | -.138 | .070 | .162 | -.014 | -.088 | -.108 | -.048 | -.047 |
| 48. | -.257 | -.804 | -.512 | | -.308 | -.286 | -.138 | .070 | .162 | -.014 | -.088 | -.108 | -.048 | -.047 |
| 50. | -.271 | -.818 | -.512 | | -.311 | -.286 | -.138 | .071 | .178 | -.013 | -.087 | -.108 | -.048 | -.047 |
| 52. | -.272 | -.819 | -.520 | | -.308 | -.286 | -.138 | .073 | .180 | .000 | -.081 | -.108 | -.048 | -.048 |
| 54. | -.287 | -.832 | -.525 | | -.316 | -.286 | -.138 | .070 | .180 | .002 | -.077 | -.108 | -.048 | -.047 |
| 56. | -.287 | -.832 | -.525 | | -.316 | -.286 | -.138 | .070 | .180 | .002 | -.077 | -.108 | -.048 | -.050 |
| 58. | -.288 | -.834 | -.525 | | -.316 | -.286 | -.138 | .070 | .197 | .002 | -.077 | -.108 | -.048 | -.059 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/10/12.

FLT 61 RUN 26B TIME 55556.200 MU= 0.000 CLF= .00339 TEMP(U60)= 12.7 C = 54.82 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 60. | -.301 | -.846 | -.525 | | -.316 | -.286 | -.138 | .070 | .197 | .002 | -.077 | -.108 | -.048 | -.059 |
| 62. | -.301 | -.846 | -.525 | | -.316 | -.286 | -.138 | .070 | .197 | .002 | -.077 | -.108 | -.048 | -.059 |
| 64. | -.304 | -.846 | -.525 | | -.316 | -.286 | -.138 | .070 | .197 | .002 | -.077 | -.108 | -.048 | -.059 |
| 66. | -.316 | -.850 | -.534 | | -.316 | -.286 | -.138 | .070 | .199 | .004 | -.077 | -.108 | -.048 | -.059 |
| 68. | -.316 | -.860 | -.536 | | -.316 | -.286 | -.138 | .070 | .214 | .018 | -.077 | -.108 | -.048 | -.059 |
| 70. | -.320 | -.860 | -.536 | | -.316 | -.286 | -.138 | .070 | .214 | .018 | -.077 | -.108 | -.048 | -.059 |
| 72. | -.331 | -.865 | -.536 | | -.316 | -.286 | -.138 | .070 | .218 | .018 | -.077 | -.108 | -.048 | -.059 |
| 74. | -.336 | -.874 | -.536 | | -.316 | -.286 | -.138 | .070 | .231 | .018 | -.077 | -.108 | -.048 | -.059 |
| 76. | -.346 | -.880 | -.547 | | -.316 | -.286 | -.138 | .070 | .236 | .022 | -.077 | -.108 | -.048 | -.059 |
| 78. | -.351 | -.888 | -.548 | | -.316 | -.286 | -.145 | .070 | .248 | .033 | -.077 | -.108 | -.048 | -.059 |
| 80. | -.361 | -.888 | -.548 | | -.316 | -.286 | -.142 | .070 | .248 | .033 | -.077 | -.108 | -.048 | -.059 |
| 82. | -.367 | -.888 | -.548 | | -.316 | -.286 | -.138 | .070 | .255 | .033 | -.067 | -.108 | -.048 | -.059 |
| 84. | -.382 | -.883 | -.548 | | -.328 | -.286 | -.138 | .070 | .272 | .039 | -.067 | -.108 | -.048 | -.059 |
| 86. | -.397 | -.888 | -.548 | | -.317 | -.286 | -.138 | .070 | .282 | .049 | -.056 | -.099 | -.048 | -.059 |
| 88. | -.412 | -.888 | -.546 | | -.316 | -.286 | -.138 | .070 | .291 | .056 | -.056 | -.099 | -.048 | -.059 |
| 90. | -.428 | -.907 | -.548 | | -.327 | -.286 | -.138 | .073 | .308 | .065 | -.053 | -.098 | -.049 | -.068 |
| 92. | -.443 | -.916 | -.548 | | -.328 | -.286 | -.138 | .071 | .335 | .073 | -.056 | -.099 | -.048 | -.071 |
| 94. | -.467 | -.926 | -.560 | | -.327 | -.286 | -.138 | .073 | .351 | .080 | -.052 | -.098 | -.049 | -.071 |
| 96. | -.498 | -.930 | -.560 | | -.327 | -.286 | -.138 | .071 | .361 | .080 | -.045 | -.099 | -.048 | -.071 |
| 98. | -.518 | -.942 | -.560 | | -.316 | -.286 | -.138 | .070 | .379 | .089 | -.043 | -.099 | -.048 | -.070 |
| 100. | -.534 | -.944 | -.563 | | -.316 | -.286 | -.138 | .070 | .397 | .105 | -.035 | -.099 | -.048 | -.060 |
| 102. | -.560 | -.956 | -.571 | | -.316 | -.286 | -.138 | .070 | .414 | .111 | -.032 | -.096 | -.048 | -.069 |
| 104. | -.579 | -.971 | -.571 | | -.319 | -.286 | -.138 | .070 | .432 | .122 | -.024 | -.089 | -.046 | -.060 |
| 106. | -.606 | -.985 | -.570 | | -.329 | -.286 | -.138 | .070 | .450 | .126 | -.024 | -.089 | -.038 | -.070 |
| 108. | -.636 | -1.000 | -.570 | | -.328 | -.286 | -.138 | .071 | .468 | .139 | -.019 | -.089 | -.038 | -.059 |
| 110. | -.654 | -1.001 | -.577 | | -.327 | -.286 | -.138 | .073 | .471 | .142 | -.011 | -.089 | -.038 | -.072 |
| 112. | -.683 | -1.001 | -.583 | | -.329 | -.286 | -.138 | .070 | .485 | .155 | -.009 | -.089 | -.038 | -.070 |
| 114. | -.699 | -1.015 | -.583 | | -.329 | -.286 | -.138 | .070 | .488 | .157 | -.002 | -.089 | -.038 | -.070 |
| 116. | -.700 | -1.016 | -.583 | | -.329 | -.286 | -.138 | .070 | .504 | .157 | -.002 | -.089 | -.038 | -.070 |
| 118. | -.715 | -1.029 | -.583 | | -.329 | -.286 | -.138 | .070 | .505 | .157 | .003 | -.089 | -.038 | -.070 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/10/12.

FLT 61 RUN 26B TIME 55556.200 MU= 0.000 CLP= .00339 TEMP(U60)= 12.7 C = 54.82 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 120. | -.730 | -1.031 | -.583 | | -.329 | -.286 | -.138 | .070 | .505 | .172 | .008 | -.084 | -.038 | -.070 |
| 122. | -.745 | -1.043 | -.590 | | -.329 | -.286 | -.138 | .070 | .505 | .173 | .008 | -.079 | -.038 | -.070 |
| 124. | -.746 | -1.043 | -.595 | | -.329 | -.286 | -.138 | .070 | .506 | .173 | .008 | -.079 | -.038 | -.070 |
| 126. | -.761 | -1.046 | -.595 | | -.329 | -.286 | -.138 | .070 | .522 | .173 | .008 | -.079 | -.038 | -.070 |
| 128. | -.774 | -1.057 | -.595 | | -.329 | -.286 | -.138 | .070 | .522 | .173 | .008 | -.079 | -.038 | -.070 |
| 130. | -.774 | -1.057 | -.595 | | -.329 | -.286 | -.138 | .070 | .522 | .173 | .008 | -.079 | -.038 | -.070 |
| 132. | -.774 | -1.057 | -.595 | | -.329 | -.286 | -.138 | .070 | .522 | .175 | .016 | -.079 | -.038 | -.070 |
| 134. | -.778 | -1.062 | -.595 | | -.329 | -.286 | -.138 | .070 | .522 | .189 | .019 | -.072 | -.038 | -.070 |
| 136. | -.793 | -1.071 | -.595 | | -.329 | -.286 | -.138 | .070 | .526 | .189 | .019 | -.070 | -.038 | -.070 |
| 138. | -.804 | -1.071 | -.595 | | -.329 | -.286 | -.138 | .070 | .540 | .189 | .019 | -.070 | -.038 | -.070 |
| 140. | -.804 | -1.071 | -.595 | | -.329 | -.286 | -.138 | .070 | .540 | .189 | .019 | -.070 | -.038 | -.065 |
| 142. | -.809 | -1.071 | -.595 | | -.329 | -.286 | -.138 | .070 | .534 | .189 | .019 | -.070 | -.038 | -.059 |
| 144. | -.818 | -1.071 | -.595 | | -.318 | -.286 | -.138 | .070 | .522 | .189 | .019 | -.070 | -.038 | -.065 |
| 146. | -.818 | -1.071 | -.595 | | -.316 | -.274 | -.138 | .070 | .522 | .189 | .019 | -.070 | -.038 | -.064 |
| 148. | -.818 | -1.071 | -.595 | | -.316 | -.272 | -.138 | .070 | .522 | .189 | .019 | -.070 | -.038 | -.066 |
| 150. | -.818 | -1.071 | -.595 | | -.316 | -.272 | -.138 | .070 | .522 | .189 | .019 | -.070 | -.038 | -.063 |
| 152. | -.818 | -1.062 | -.595 | | -.328 | -.272 | -.128 | .070 | .522 | .189 | .019 | -.070 | -.038 | -.059 |
| 154. | -.818 | -1.057 | -.593 | | -.328 | -.272 | -.125 | .070 | .522 | .189 | .019 | -.070 | -.038 | -.059 |
| 156. | -.818 | -1.057 | -.583 | | -.316 | -.272 | -.125 | .070 | .522 | .189 | .019 | -.070 | -.038 | -.059 |
| 158. | -.818 | -1.057 | -.583 | | -.317 | -.272 | -.125 | .070 | .522 | .189 | .019 | -.070 | -.038 | -.059 |
| 160. | -.818 | -1.057 | -.583 | | -.329 | -.272 | -.125 | .070 | .522 | .189 | .021 | -.070 | -.038 | -.059 |
| 162. | -.818 | -1.046 | -.583 | | -.327 | -.272 | -.125 | .070 | .522 | .189 | .030 | -.070 | -.038 | -.059 |
| 164. | -.818 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .522 | .189 | .030 | -.070 | -.038 | -.059 |
| 166. | -.829 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .522 | .189 | .030 | -.070 | -.038 | -.059 |
| 168. | -.833 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .522 | .189 | .030 | -.070 | -.038 | -.059 |
| 170. | -.833 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .522 | .189 | .030 | -.070 | -.038 | -.059 |
| 172. | -.846 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .536 | .189 | .030 | -.070 | -.038 | -.059 |
| 174. | -.848 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .540 | .201 | .030 | -.070 | -.038 | -.059 |
| 176. | -.848 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .540 | .204 | .030 | -.066 | -.034 | -.059 |
| 178. | -.848 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .540 | .204 | .030 | -.060 | -.027 | -.059 |

FLT 61 RUN26B

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/10/12.

FLT 61 RUN 26B TIME 55556.200 MU= 0.000 CLP= .00339 TEMP(U60)= 12.7 C = 54.82 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 180. | -.848 | -1.043 | -.583 | | -.316 | -.272 | -.125 | .070 | .540 | .204 | .035 | -.060 | -.027 | -.059 |
| 182. | -.863 | -1.043 | -.588 | | -.316 | -.266 | -.125 | .070 | .540 | .204 | .040 | -.060 | -.027 | -.059 |
| 184. | -.863 | -1.043 | -.594 | | -.315 | -.265 | -.125 | .071 | .540 | .205 | .042 | -.055 | -.028 | -.059 |
| 186. | -.863 | -1.045 | -.595 | | -.315 | -.272 | -.125 | .073 | .540 | .204 | .042 | -.050 | -.028 | -.060 |
| 188. | -.864 | -1.057 | -.595 | | -.316 | -.272 | -.125 | .070 | .540 | .204 | .040 | -.050 | -.027 | -.059 |
| 190. | -.878 | -1.057 | -.593 | | -.316 | -.272 | -.125 | .070 | .540 | .219 | .047 | -.050 | -.027 | -.059 |
| 192. | -.877 | -1.057 | -.594 | | -.315 | -.272 | -.125 | .072 | .540 | .206 | .047 | -.050 | -.028 | -.059 |
| 194. | -.878 | -1.057 | -.595 | | -.316 | -.272 | -.125 | .072 | .540 | .220 | .049 | -.050 | -.028 | -.060 |
| 196. | -.878 | -1.057 | -.595 | | -.316 | -.272 | -.125 | .070 | .542 | .220 | .051 | -.050 | -.027 | -.059 |
| 198. | -.881 | -1.057 | -.593 | | -.316 | -.272 | -.125 | .070 | .557 | .220 | .051 | -.050 | -.027 | -.059 |
| 200. | -.892 | -1.062 | -.592 | | -.324 | -.272 | -.125 | .072 | .557 | .220 | .054 | -.035 | -.021 | -.059 |
| 202. | -.897 | -1.071 | -.592 | | -.327 | -.273 | -.125 | .074 | .557 | .220 | .055 | -.031 | -.018 | -.060 |
| 204. | -.907 | -1.065 | -.594 | | -.317 | -.273 | -.125 | .074 | .557 | .220 | .064 | -.031 | -.018 | -.060 |
| 206. | -.907 | -1.057 | -.595 | | -.316 | -.272 | -.125 | .072 | .557 | .220 | .053 | -.031 | -.018 | -.060 |
| 208. | -.913 | -1.057 | -.592 | | -.316 | -.272 | -.125 | .070 | .557 | .225 | .051 | -.031 | -.017 | -.059 |
| 210. | -.922 | -1.057 | -.595 | | -.315 | -.273 | -.125 | .073 | .557 | .236 | .064 | -.031 | -.018 | -.060 |
| 212. | -.929 | -1.057 | -.592 | | -.316 | -.272 | -.125 | .071 | .557 | .236 | .062 | -.031 | -.018 | -.059 |
| 214. | -.937 | -1.057 | -.594 | | -.315 | -.273 | -.125 | .073 | .565 | .236 | .065 | -.031 | -.018 | -.060 |
| 216. | -.937 | -1.057 | -.593 | | -.316 | -.259 | -.125 | .071 | .574 | .236 | .062 | -.031 | -.017 | -.059 |
| 218. | -.937 | -1.057 | -.594 | | -.303 | -.259 | -.125 | .073 | .574 | .236 | .065 | -.031 | -.018 | -.060 |
| 220. | -.937 | -1.047 | -.590 | | -.316 | -.258 | -.125 | .071 | .574 | .236 | .062 | -.031 | -.017 | -.059 |
| 222. | -.937 | -1.043 | -.581 | | -.302 | -.259 | -.125 | .073 | .565 | .228 | .064 | -.031 | -.018 | -.060 |
| 224. | -.937 | -1.043 | -.581 | | -.302 | -.259 | -.125 | .065 | .557 | .220 | .055 | -.031 | -.018 | -.060 |
| 226. | -.937 | -1.043 | -.581 | | -.302 | -.259 | -.125 | .073 | .557 | .220 | .055 | -.031 | -.019 | -.060 |
| 228. | -.926 | -1.031 | -.581 | | -.302 | -.259 | -.125 | .074 | .557 | .220 | .055 | -.031 | -.028 | -.060 |
| 230. | -.922 | -1.029 | -.581 | | -.302 | -.259 | -.125 | .064 | .557 | .220 | .055 | -.031 | -.028 | -.060 |
| 232. | -.910 | -1.029 | -.577 | | -.302 | -.259 | -.125 | .063 | .557 | .220 | .055 | -.031 | -.028 | -.060 |
| 234. | -.907 | -1.016 | -.569 | | -.302 | -.259 | -.125 | .063 | .557 | .220 | .055 | -.031 | -.028 | -.060 |
| 236. | -.895 | -1.015 | -.569 | | -.302 | -.259 | -.125 | .063 | .544 | .220 | .055 | -.031 | -.028 | -.060 |
| 238. | -.892 | -1.001 | -.569 | | -.302 | -.259 | -.125 | .063 | .540 | .208 | .051 | -.031 | -.028 | -.060 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/10/12.

FLT 61 RUN 26B TIME 55556.200 MU= 0.000 CLP= .00339 TEMP(U60)= 12.7 C = 54.82 F

| X/C= AZIMUTH | UPPER SURFACE CP VALUES .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | LOWER SURFACE CP VALUES .02 | .10 | .20 | .50 | .70 | .90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 240. | -.879 | -1.000 | -.565 | | -.302 | -.259 | -.125 | .063 | .540 | .205 | .044 | -.031 | -.028 | -.060 |
| 242. | -.864 | -.986 | -.559 | | -.303 | -.259 | -.125 | .063 | .525 | .204 | .042 | -.039 | -.028 | -.059 |
| 244. | -.834 | -.971 | -.552 | | -.303 | -.259 | -.125 | .061 | .508 | .191 | .037 | -.050 | -.028 | -.047 |
| 246. | -.819 | -.957 | -.548 | | -.303 | -.259 | -.125 | .063 | .505 | .189 | .032 | -.050 | -.024 | -.048 |
| 248. | -.789 | -.944 | -.548 | | -.304 | -.258 | -.125 | .060 | .489 | .189 | .030 | -.050 | -.017 | -.047 |
| 250. | -.774 | -.942 | -.548 | | -.304 | -.258 | -.125 | .060 | .488 | .189 | .030 | -.050 | -.017 | -.047 |
| 252. | -.773 | -.928 | -.540 | | -.304 | -.258 | -.125 | .060 | .488 | .173 | .030 | -.050 | -.017 | -.047 |
| 254. | -.756 | -.910 | -.536 | | -.304 | -.258 | -.125 | .060 | .487 | .173 | .030 | -.050 | -.017 | -.047 |
| 256. | -.728 | -.888 | -.526 | | -.296 | -.258 | -.125 | .060 | .470 | .172 | .023 | -.050 | -.017 | -.047 |
| 258. | -.710 | -.888 | -.522 | | -.291 | -.259 | -.125 | .062 | .452 | .158 | .021 | -.050 | -.018 | -.048 |
| 260. | -.682 | -.883 | -.524 | | -.290 | -.259 | -.125 | .063 | .437 | .156 | .015 | -.050 | -.025 | -.049 |
| 262. | -.671 | -.874 | -.525 | | -.291 | -.259 | -.125 | .057 | .437 | .142 | .009 | -.050 | -.028 | -.048 |
| 264. | -.663 | -.874 | -.525 | | -.292 | -.258 | -.125 | .050 | .433 | .142 | .008 | -.050 | -.027 | -.047 |
| 266. | -.637 | -.868 | -.525 | | -.292 | -.258 | -.125 | .050 | .420 | .139 | .008 | -.050 | -.027 | -.047 |
| 268. | -.622 | -.860 | -.514 | | -.292 | -.258 | -.125 | .050 | .415 | .126 | -.000 | -.050 | -.027 | -.047 |
| 270. | -.612 | -.860 | -.513 | | -.292 | -.258 | -.125 | .056 | .402 | .126 | -.002 | -.059 | -.027 | -.047 |
| 272. | -.606 | -.853 | -.513 | | -.292 | -.258 | -.125 | .054 | .397 | .126 | -.002 | -.060 | -.027 | -.047 |
| 274. | -.591 | -.846 | -.513 | | -.292 | -.258 | -.125 | .057 | .385 | .121 | -.002 | -.060 | -.027 | -.047 |
| 276. | -.575 | -.838 | -.513 | | -.292 | -.258 | -.125 | .060 | .378 | .111 | -.002 | -.060 | -.027 | -.047 |
| 278. | -.560 | -.832 | -.513 | | -.292 | -.258 | -.125 | .060 | .368 | .111 | -.013 | -.060 | -.027 | -.047 |
| 280. | -.545 | -.823 | -.513 | | -.292 | -.258 | -.125 | .060 | .360 | .111 | -.013 | -.060 | -.027 | -.047 |
| 282. | -.538 | -.818 | -.513 | | -.292 | -.258 | -.125 | .052 | .351 | .111 | -.013 | -.060 | -.027 | -.047 |
| 284. | -.538 | -.818 | -.511 | | -.292 | -.258 | -.125 | .050 | .351 | .111 | -.012 | -.060 | -.027 | -.047 |
| 286. | -.529 | -.818 | -.502 | | -.292 | -.258 | -.125 | .050 | .351 | .103 | -.004 | -.060 | -.027 | -.047 |
| 288. | -.514 | -.818 | -.503 | | -.292 | -.258 | -.125 | .050 | .341 | .095 | -.013 | -.060 | -.027 | -.047 |
| 290. | -.498 | -.817 | -.508 | | -.291 | -.257 | -.125 | .050 | .335 | .096 | -.012 | -.062 | -.028 | -.047 |
| 292. | -.493 | -.817 | -.510 | | -.289 | -.248 | -.126 | .066 | .335 | .097 | -.006 | -.069 | -.029 | -.049 |
| 294. | -.493 | -.818 | -.512 | | -.289 | -.260 | -.126 | .057 | .334 | .096 | -.008 | -.069 | -.029 | -.050 |
| 296. | -.493 | -.817 | -.510 | | -.291 | -.259 | -.125 | .060 | .322 | .086 | -.011 | -.067 | -.028 | -.048 |
| 298. | -.493 | -.818 | -.513 | | -.289 | -.259 | -.126 | .066 | .317 | .080 | -.008 | -.060 | -.029 | -.050 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/10/12.

FLT 61 RUN 26B TIME 55556.200 MU= 0.000 CLP= .00339 TEMP(U60)= 12.7 C = 54.82 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 | |
| AZIMUTH | | | | | | | | | | | | | | | |
| 300. | -.493 | -.818 | -.513 | | -.292 | -.258 | -.125 | .050 | .317 | .080 | -.013 | -.060 | -.027 | -.047 | |
| 302. | -.493 | -.818 | -.506 | | -.292 | -.258 | -.125 | .051 | .317 | .080 | -.013 | -.063 | -.027 | -.036 | |
| 304. | -.480 | -.818 | -.499 | | -.292 | -.258 | -.125 | .060 | .317 | .080 | -.017 | -.070 | -.027 | -.036 | |
| 306. | -.478 | -.817 | -.499 | | -.290 | -.259 | -.125 | .061 | .318 | .081 | -.021 | -.065 | -.028 | -.037 | |
| 308. | -.479 | -.818 | -.502 | | -.290 | -.259 | -.128 | .065 | .317 | .080 | -.020 | -.060 | -.029 | -.050 | |
| 310. | -.479 | -.818 | -.502 | | -.292 | -.258 | -.138 | .060 | .317 | .080 | -.024 | -.060 | -.027 | -.047 | |
| 312. | -.479 | -.818 | -.508 | | -.292 | -.258 | -.134 | .060 | .317 | .080 | -.024 | -.060 | -.027 | -.047 | |
| 314. | -.478 | -.818 | -.504 | | -.292 | -.258 | -.125 | .060 | .300 | .080 | -.024 | -.065 | -.027 | -.047 | |
| 316. | -.462 | -.818 | -.501 | | -.291 | -.259 | -.125 | .061 | .300 | .081 | -.022 | -.069 | -.028 | -.048 | |
| 318. | -.449 | -.815 | -.502 | | -.291 | -.259 | -.125 | .062 | .299 | .064 | -.029 | -.069 | -.028 | -.048 | |
| 320. | -.447 | -.804 | -.502 | | -.292 | -.258 | -.125 | .060 | .282 | .064 | -.035 | -.076 | -.027 | -.044 | |
| 322. | -.434 | -.804 | -.502 | | -.292 | -.258 | -.125 | .060 | .282 | .064 | -.035 | -.073 | -.027 | -.036 | |
| 324. | -.431 | -.799 | -.492 | | -.292 | -.258 | -.125 | .060 | .282 | .064 | -.035 | -.070 | -.027 | -.036 | |
| 326. | -.420 | -.790 | -.490 | | -.292 | -.258 | -.125 | .060 | .282 | .064 | -.035 | -.070 | -.027 | -.036 | |
| 328. | -.420 | -.790 | -.490 | | -.292 | -.258 | -.125 | .060 | .279 | .064 | -.035 | -.070 | -.027 | -.036 | |
| 330. | -.415 | -.790 | -.490 | | -.292 | -.258 | -.125 | .060 | .265 | .061 | -.035 | -.070 | -.027 | -.036 | |
| 332. | -.405 | -.790 | -.490 | | -.292 | -.258 | -.125 | .060 | .265 | .049 | -.035 | -.070 | -.027 | -.036 | |
| 334. | -.405 | -.790 | -.488 | | -.292 | -.258 | -.125 | .060 | .260 | .049 | -.044 | -.070 | -.035 | -.036 | |
| 336. | -.399 | -.789 | -.490 | | -.290 | -.259 | -.133 | .062 | .248 | .049 | -.042 | -.069 | -.038 | -.043 | |
| 338. | -.390 | -.790 | -.490 | | -.291 | -.258 | -.138 | .061 | .248 | .049 | -.045 | -.070 | -.038 | -.048 | |
| 340. | -.390 | -.790 | -.490 | | -.292 | -.258 | -.138 | .060 | .248 | .049 | -.045 | -.079 | -.038 | -.055 | |
| 342. | -.390 | -.790 | -.490 | | -.292 | -.258 | -.128 | .060 | .248 | .049 | -.045 | -.079 | -.038 | -.051 | |
| 344. | -.390 | -.790 | -.490 | | -.292 | -.258 | -.125 | .060 | .248 | .049 | -.045 | -.079 | -.038 | -.039 | |
| 346. | -.382 | -.790 | -.490 | | -.292 | -.258 | -.125 | .060 | .240 | .041 | -.045 | -.079 | -.038 | -.036 | |
| 348. | -.375 | -.780 | -.488 | | -.291 | -.258 | -.125 | .069 | .231 | .033 | -.046 | -.080 | -.038 | -.036 | |
| 350. | -.366 | -.775 | -.487 | | -.290 | -.259 | -.125 | .064 | .232 | .034 | -.053 | -.089 | -.038 | -.037 | |
| 352. | -.350 | -.764 | -.483 | | -.290 | -.259 | -.125 | .073 | .222 | .034 | -.052 | -.089 | -.039 | -.037 | |
| 354. | -.335 | -.761 | -.473 | | -.287 | -.260 | -.138 | .077 | .215 | .025 | -.049 | -.087 | -.039 | -.038 | |
| 356. | -.330 | -.761 | -.473 | | -.276 | -.260 | -.127 | .067 | .204 | .019 | -.051 | -.079 | -.039 | -.038 | |
| 358. | -.319 | -.749 | -.473 | | -.276 | -.260 | -.139 | .067 | .186 | .009 | -.063 | -.081 | -.039 | -.038 | |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 1 TIME 53718.300 MU= .151 CLP= .00423 TEMP(U60)= 9.2 C = 48.63 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 0. | -.284 | -.809 | -.505 | | -.390 | -.323 | -.178 | .073 | .197 | -.067 | -.069 | -.096 | -.055 | -.055 |
| 2. | -.259 | -.800 | -.505 | | -.399 | -.318 | -.175 | .069 | .173 | -.080 | -.074 | -.094 | -.056 | -.052 |
| 4. | -.238 | -.791 | -.508 | | -.394 | -.315 | -.173 | .080 | .150 | -.097 | -.082 | -.108 | -.064 | -.052 |
| 6. | -.203 | -.782 | -.502 | | -.389 | -.311 | -.171 | .079 | .127 | -.100 | -.086 | -.112 | -.067 | -.065 |
| 8. | -.181 | -.773 | -.496 | | -.390 | -.313 | -.169 | .078 | .104 | -.113 | -.097 | -.122 | -.075 | -.064 |
| 10. | -.146 | -.764 | -.491 | | -.395 | -.322 | -.167 | .077 | .082 | -.115 | -.103 | -.132 | -.074 | -.063 |
| 12. | -.126 | -.755 | -.485 | | -.391 | -.319 | -.165 | .076 | .079 | -.128 | -.108 | -.137 | -.073 | -.063 |
| 14. | -.108 | -.749 | -.477 | | -.386 | -.315 | -.163 | .076 | .059 | -.129 | -.118 | -.135 | -.072 | -.062 |
| 16. | -.089 | -.753 | -.472 | | -.387 | -.320 | -.162 | .076 | .039 | -.142 | -.127 | -.134 | -.072 | -.062 |
| 18. | -.072 | -.731 | -.469 | | -.389 | -.327 | -.161 | .083 | .018 | -.142 | -.130 | -.133 | -.077 | -.063 |
| 20. | -.039 | -.726 | -.473 | | -.387 | -.323 | -.163 | .083 | -.002 | -.157 | -.137 | -.131 | -.081 | -.061 |
| 22. | -.023 | -.731 | -.472 | | -.384 | -.328 | -.171 | .076 | -.040 | -.172 | -.149 | -.142 | -.080 | -.059 |
| 24. | -.006 | -.724 | -.466 | | -.388 | -.333 | -.164 | .083 | -.059 | -.186 | -.152 | -.149 | -.079 | -.062 |
| 26. | .010 | -.717 | -.461 | | -.388 | -.330 | -.159 | .083 | -.077 | -.185 | -.156 | -.148 | -.079 | -.071 |
| 28. | .025 | -.710 | -.458 | | -.384 | -.327 | -.167 | .084 | -.096 | -.197 | -.158 | -.153 | -.085 | -.071 |
| 30. | .041 | -.703 | -.454 | | -.381 | -.323 | -.165 | .087 | -.113 | -.198 | -.165 | -.162 | -.088 | -.070 |
| 32. | .056 | -.697 | -.450 | | -.387 | -.330 | -.163 | .085 | -.131 | -.209 | -.168 | -.163 | -.086 | -.064 |
| 34. | .071 | -.690 | -.443 | | -.388 | -.333 | -.161 | .084 | -.148 | -.210 | -.174 | -.162 | -.086 | -.061 |
| 36. | .085 | -.684 | -.442 | | -.381 | -.331 | -.161 | .091 | -.165 | -.220 | -.180 | -.161 | -.087 | -.069 |
| 38. | .099 | -.679 | -.449 | | -.380 | -.328 | -.159 | .090 | -.182 | -.222 | -.192 | -.167 | -.092 | -.063 |
| 40. | .109 | -.673 | -.446 | | -.388 | -.336 | -.165 | .087 | -.198 | -.232 | -.193 | -.167 | -.093 | -.060 |
| 42. | .113 | -.668 | -.443 | | -.387 | -.338 | -.169 | .086 | -.215 | -.234 | -.200 | -.174 | -.093 | -.060 |
| 44. | .127 | -.663 | -.439 | | -.384 | -.335 | -.168 | .086 | -.225 | -.243 | -.200 | -.174 | -.092 | -.060 |
| 46. | .140 | -.658 | -.436 | | -.381 | -.333 | -.167 | .085 | -.229 | -.246 | -.199 | -.173 | -.091 | -.065 |
| 48. | .154 | -.653 | -.433 | | -.389 | -.343 | -.165 | .084 | -.245 | -.259 | -.207 | -.172 | -.091 | -.064 |
| 50. | .180 | -.641 | -.430 | | -.377 | -.343 | -.164 | .084 | -.274 | -.272 | -.216 | -.179 | -.090 | -.064 |
| 52. | .222 | -.623 | -.427 | | -.374 | -.341 | -.163 | .083 | -.324 | -.290 | -.225 | -.178 | -.098 | -.063 |
| 54. | .249 | -.614 | -.425 | | -.383 | -.339 | -.162 | .083 | -.358 | -.305 | -.233 | -.168 | -.098 | -.056 |
| 56. | .232 | -.619 | -.433 | | -.381 | -.337 | -.161 | .082 | -.341 | -.290 | -.231 | -.176 | -.089 | -.052 |
| 58. | .189 | -.637 | -.443 | | -.377 | -.350 | -.171 | .084 | -.280 | -.253 | -.198 | -.174 | -.080 | -.052 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 1 TIME 53718.300 MU= .151 CLP= .00423 TEMP(U60)= 9.2 C = 48.63 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= / AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 60. | .154 | -.661 | -.461 | | -.387 | -.348 | -.172 | .092 | -.220 | -.224 | -.179 | -.158 | -.079 | -.061 |
| 62. | .134 | -.684 | -.459 | | -.387 | -.346 | -.161 | .091 | -.196 | -.216 | -.180 | -.165 | -.078 | -.070 |
| 64. | .128 | -.698 | -.454 | | -.396 | -.344 | -.158 | .098 | -.196 | -.222 | -.180 | -.164 | -.087 | -.072 |
| 66. | .136 | -.708 | -.446 | | -.394 | -.343 | -.157 | .090 | -.205 | -.228 | -.188 | -.163 | -.086 | -.072 |
| 68. | .140 | -.698 | -.450 | | -.392 | -.342 | -.157 | .089 | -.220 | -.235 | -.186 | -.163 | -.085 | -.062 |
| 70. | .149 | -.682 | -.454 | | -.388 | -.342 | -.157 | .094 | -.236 | -.231 | -.182 | -.162 | -.078 | -.063 |
| 72. | .152 | -.678 | -.463 | | -.390 | -.339 | -.156 | .079 | -.230 | -.216 | -.174 | -.159 | -.076 | -.061 |
| 74. | .132 | -.676 | -.469 | | -.389 | -.335 | -.167 | .079 | -.201 | -.202 | -.161 | -.150 | -.076 | -.060 |
| 76. | .094 | -.697 | -.468 | | -.388 | -.326 | -.167 | .079 | -.145 | -.178 | -.144 | -.143 | -.076 | -.060 |
| 78. | .064 | -.721 | -.467 | | -.390 | -.336 | -.166 | .079 | -.079 | -.150 | -.134 | -.143 | -.074 | -.060 |
| 80. | .026 | -.746 | -.475 | | -.397 | -.332 | -.165 | .079 | -.027 | -.143 | -.128 | -.142 | -.066 | -.060 |
| 82. | -.003 | -.770 | -.486 | | -.397 | -.321 | -.154 | .079 | .009 | -.132 | -.127 | -.142 | -.066 | -.060 |
| 84. | -.019 | -.795 | -.476 | | -.392 | -.321 | -.152 | .087 | .015 | -.129 | -.127 | -.142 | -.069 | -.060 |
| 86. | -.020 | -.807 | -.464 | | -.389 | -.320 | -.142 | .087 | .015 | -.129 | -.127 | -.142 | -.075 | -.069 |
| 88. | -.032 | -.820 | -.464 | | -.391 | -.320 | -.142 | .087 | .015 | -.129 | -.127 | -.142 | -.075 | -.060 |
| 90. | -.033 | -.833 | -.464 | | -.389 | -.320 | -.142 | .087 | .000 | -.141 | -.131 | -.142 | -.075 | -.060 |
| 92. | -.033 | -.844 | -.464 | | -.396 | -.320 | -.142 | .087 | -.001 | -.142 | -.136 | -.142 | -.071 | -.060 |
| 94. | -.007 | -.845 | -.464 | | -.390 | -.320 | -.142 | .087 | -.016 | -.142 | -.136 | -.142 | -.066 | -.060 |
| 96. | -.006 | -.845 | -.465 | | -.385 | -.321 | -.142 | .087 | -.033 | -.155 | -.137 | -.142 | -.066 | -.060 |
| 98. | .006 | -.846 | -.465 | | -.386 | -.321 | -.142 | .088 | -.049 | -.156 | -.142 | -.142 | -.066 | -.057 |
| 100. | .008 | -.845 | -.459 | | -.386 | -.322 | -.142 | .088 | -.065 | -.156 | -.146 | -.142 | -.066 | -.049 |
| 102. | .019 | -.834 | -.456 | | -.387 | -.322 | -.142 | .088 | -.082 | -.170 | -.147 | -.143 | -.067 | -.050 |
| 104. | .022 | -.826 | -.455 | | -.381 | -.323 | -.143 | .084 | -.096 | -.170 | -.147 | -.143 | -.067 | -.050 |
| 106. | .033 | -.824 | -.455 | | -.375 | -.316 | -.149 | .081 | -.099 | -.171 | -.145 | -.144 | -.063 | -.047 |
| 108. | .036 | -.805 | -.451 | | -.375 | -.321 | -.151 | .085 | -.113 | -.184 | -.144 | -.138 | -.060 | -.046 |
| 110. | .046 | -.778 | -.451 | | -.379 | -.317 | -.145 | .087 | -.116 | -.185 | -.147 | -.136 | -.059 | -.052 |
| 112. | .047 | -.763 | -.450 | | -.381 | -.322 | -.145 | .089 | -.130 | -.186 | -.149 | -.136 | -.065 | -.050 |
| 114. | .047 | -.739 | -.445 | | -.380 | -.319 | -.146 | .092 | -.134 | -.186 | -.146 | -.130 | -.069 | -.052 |
| 116. | .047 | -.721 | -.436 | | -.384 | -.316 | -.146 | .087 | -.147 | -.187 | -.149 | -.128 | -.069 | -.052 |
| 118. | .047 | -.711 | -.437 | | -.377 | -.306 | -.146 | .081 | -.148 | -.188 | -.151 | -.129 | -.068 | -.051 |

FLT 63 RUN1

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 1 TIME 53718.300 MU= .151 CLP= .00423 TEMP(U60)= 9.2 C = 48.63 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 120. | .052 | -.702 | -.426 | | -.377 | -.315 | -.147 | .081 | -.153 | -.193 | -.152 | -.129 | -.062 | -.051 |
| 122. | .062 | -.685 | -.418 | | -.366 | -.309 | -.149 | .085 | -.166 | -.204 | -.149 | -.131 | -.069 | -.053 |
| 124. | .062 | -.676 | -.419 | | -.367 | -.308 | -.141 | .086 | -.167 | -.205 | -.151 | -.131 | -.063 | -.054 |
| 126. | .062 | -.665 | -.424 | | -.368 | -.310 | -.146 | .087 | -.174 | -.206 | -.150 | -.132 | -.071 | -.048 |
| 128. | .062 | -.650 | -.414 | | -.373 | -.311 | -.151 | .078 | -.185 | -.208 | -.155 | -.132 | -.062 | -.042 |
| 130. | .063 | -.648 | -.419 | | -.374 | -.314 | -.152 | .076 | -.187 | -.209 | -.154 | -.134 | -.062 | -.043 |
| 132. | .063 | -.644 | -.419 | | -.379 | -.315 | -.153 | .075 | -.196 | -.210 | -.157 | -.134 | -.062 | -.042 |
| 134. | .064 | -.635 | -.410 | | -.379 | -.318 | -.144 | .077 | -.206 | -.212 | -.156 | -.135 | -.063 | -.043 |
| 136. | .065 | -.625 | -.413 | | -.368 | -.306 | -.143 | .081 | -.208 | -.213 | -.155 | -.127 | -.065 | -.045 |
| 138. | .065 | -.616 | -.417 | | -.359 | -.308 | -.144 | .082 | -.209 | -.215 | -.147 | -.127 | -.065 | -.046 |
| 140. | .065 | -.617 | -.408 | | -.365 | -.309 | -.144 | .077 | -.211 | -.209 | -.151 | -.119 | -.064 | -.044 |
| 142. | .066 | -.611 | -.410 | | -.365 | -.313 | -.146 | .083 | -.202 | -.203 | -.149 | -.121 | -.066 | -.046 |
| 144. | .057 | -.602 | -.403 | | -.369 | -.315 | -.147 | .081 | -.197 | -.205 | -.150 | -.121 | -.065 | -.046 |
| 146. | .052 | -.604 | -.407 | | -.369 | -.317 | -.149 | .084 | -.199 | -.207 | -.140 | -.123 | -.057 | -.047 |
| 148. | .053 | -.610 | -.413 | | -.362 | -.305 | -.150 | .075 | -.188 | -.199 | -.142 | -.124 | -.058 | -.048 |
| 150. | .041 | -.603 | -.413 | | -.367 | -.307 | -.151 | .073 | -.184 | -.196 | -.143 | -.122 | -.057 | -.047 |
| 152. | .038 | -.593 | -.406 | | -.371 | -.307 | -.152 | .070 | -.186 | -.197 | -.137 | -.119 | -.057 | -.046 |
| 154. | .039 | -.598 | -.406 | | -.369 | -.298 | -.154 | .077 | -.188 | -.199 | -.135 | -.127 | -.059 | -.049 |
| 156. | .026 | -.604 | -.403 | | -.367 | -.300 | -.142 | .078 | -.175 | -.189 | -.133 | -.129 | -.060 | -.049 |
| 158. | .024 | -.595 | -.408 | | -.377 | -.303 | -.143 | .075 | -.157 | -.187 | -.128 | -.126 | -.057 | -.048 |
| 160. | .010 | -.601 | -.414 | | -.373 | -.306 | -.146 | .076 | -.155 | -.190 | -.131 | -.120 | -.049 | -.049 |
| 162. | .008 | -.592 | -.412 | | -.373 | -.303 | -.160 | .074 | -.157 | -.178 | -.133 | -.121 | -.048 | -.048 |
| 164. | -.007 | -.597 | -.410 | | -.368 | -.294 | -.159 | .075 | -.141 | -.177 | -.130 | -.118 | -.049 | -.048 |
| 166. | -.009 | -.589 | -.413 | | -.366 | -.297 | -.149 | .076 | -.140 | -.179 | -.125 | -.113 | -.049 | -.049 |
| 168. | -.008 | -.595 | -.409 | | -.368 | -.301 | -.150 | .077 | -.123 | -.181 | -.125 | -.109 | -.051 | -.050 |
| 170. | -.025 | -.600 | -.408 | | -.372 | -.305 | -.152 | .077 | -.123 | -.167 | -.119 | -.105 | -.052 | -.052 |
| 172. | -.026 | -.592 | -.411 | | -.368 | -.308 | -.154 | .070 | -.124 | -.167 | -.114 | -.106 | -.052 | -.050 |
| 174. | -.043 | -.599 | -.415 | | -.371 | -.312 | -.156 | .071 | -.105 | -.169 | -.114 | -.107 | -.054 | -.040 |
| 176. | -.044 | -.603 | -.404 | | -.366 | -.317 | -.158 | .075 | -.106 | -.171 | -.107 | -.109 | -.049 | -.041 |
| 178. | -.046 | -.596 | -.398 | | -.367 | -.309 | -.160 | .073 | -.086 | -.156 | -.106 | -.102 | -.042 | -.041 |

FLT 63 RUN1

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 1 TIME 53718.300 MU= .151 CLP= .00423 TEMP(U60)= 9.2 C = 48.63 F

| X/C= AZIMUTH | UPPER SURFACE CP VALUES .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | LOWER SURFACE CP VALUES .02 | .10 | .20 | .50 | .70 | .90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180. | -.065 | -.603 | -.405 | | -.370 | -.304 | -.155 | .072 | -.085 | -.156 | -.106 | -.099 | -.043 | -.040 |
| 182. | -.082 | -.611 | -.407 | | -.376 | -.307 | -.147 | .074 | -.067 | -.141 | -.100 | -.100 | -.043 | -.042 |
| 184. | -.086 | -.618 | -.411 | | -.379 | -.311 | -.149 | .069 | -.064 | -.142 | -.095 | -.093 | -.044 | -.041 |
| 186. | -.106 | -.625 | -.420 | | -.382 | -.316 | -.151 | .066 | -.042 | -.141 | -.085 | -.091 | -.046 | -.044 |
| 188. | -.126 | -.626 | -.421 | | -.378 | -.318 | -.160 | .063 | -.020 | -.127 | -.086 | -.092 | -.036 | -.043 |
| 190. | -.142 | -.622 | -.430 | | -.376 | -.309 | -.163 | .064 | -.001 | -.124 | -.085 | -.093 | -.033 | -.043 |
| 192. | -.150 | -.630 | -.431 | | -.395 | -.305 | -.156 | .064 | .004 | -.111 | -.078 | -.084 | -.032 | -.044 |
| 194. | -.171 | -.637 | -.441 | | -.388 | -.310 | -.158 | .066 | .028 | -.111 | -.072 | -.082 | -.034 | -.044 |
| 196. | -.194 | -.645 | -.444 | | -.392 | -.312 | -.160 | .066 | .046 | -.108 | -.065 | -.072 | -.033 | -.045 |
| 198. | -.216 | -.652 | -.452 | | -.396 | -.317 | -.161 | .066 | .054 | -.094 | -.062 | -.071 | -.034 | -.044 |
| 200. | -.231 | -.660 | -.454 | | -.402 | -.320 | -.163 | .065 | .079 | -.089 | -.065 | -.072 | -.033 | -.045 |
| 202. | -.243 | -.668 | -.460 | | -.405 | -.324 | -.165 | .058 | .096 | -.076 | -.050 | -.073 | -.034 | -.045 |
| 204. | -.267 | -.676 | -.468 | | -.393 | -.328 | -.167 | .055 | .107 | -.077 | -.049 | -.060 | -.035 | -.047 |
| 206. | -.291 | -.695 | -.473 | | -.416 | -.311 | -.169 | .053 | .134 | -.070 | -.038 | -.060 | -.034 | -.046 |
| 208. | -.316 | -.711 | -.473 | | -.404 | -.312 | -.171 | .052 | .150 | -.048 | -.039 | -.061 | -.021 | -.046 |
| 210. | -.341 | -.719 | -.479 | | -.403 | -.318 | -.174 | .059 | .164 | -.035 | -.017 | -.062 | -.023 | -.049 |
| 212. | -.367 | -.727 | -.489 | | -.408 | -.321 | -.176 | .062 | .192 | -.026 | -.017 | -.063 | -.024 | -.051 |
| 214. | -.406 | -.735 | -.495 | | -.417 | -.322 | -.177 | .056 | .221 | -.015 | -.009 | -.063 | -.021 | -.048 |
| 216. | -.442 | -.743 | -.499 | | -.422 | -.326 | -.178 | .055 | .251 | -.004 | -.009 | -.064 | -.020 | -.048 |
| 218. | -.470 | -.767 | -.503 | | -.426 | -.329 | -.163 | .055 | .265 | .008 | -.008 | -.065 | -.006 | -.048 |
| 220. | -.497 | -.780 | -.509 | | -.428 | -.334 | -.162 | .060 | .284 | .021 | -.001 | -.065 | -.007 | -.051 |
| 222. | -.526 | -.788 | -.511 | | -.434 | -.334 | -.163 | .057 | .315 | .031 | .025 | -.066 | -.006 | -.050 |
| 224. | -.570 | -.796 | -.531 | | -.434 | -.317 | -.166 | .066 | .329 | .031 | .033 | -.064 | -.011 | -.054 |
| 226. | -.606 | -.822 | -.562 | | -.439 | -.318 | -.166 | .058 | .350 | .046 | .040 | -.048 | -.019 | -.051 |
| 228. | -.636 | -.833 | -.567 | | -.427 | -.321 | -.168 | .058 | .382 | .055 | .041 | -.033 | -.006 | -.051 |
| 230. | -.684 | -.840 | -.572 | | -.436 | -.323 | -.169 | .059 | .415 | .072 | .046 | -.026 | -.006 | -.051 |
| 232. | -.719 | -.869 | -.577 | | -.449 | -.326 | -.171 | .059 | .426 | .080 | .059 | -.038 | -.006 | -.052 |
| 234. | -.750 | -.878 | -.589 | | -.445 | -.329 | -.172 | .060 | .452 | .099 | .059 | -.038 | -.006 | -.052 |
| 236. | -.801 | -.907 | -.604 | | -.461 | -.332 | -.174 | .061 | .462 | .106 | .067 | -.032 | -.007 | -.053 |
| 238. | -.835 | -.914 | -.610 | | -.457 | -.335 | -.176 | .065 | .490 | .107 | .080 | -.023 | -.008 | -.055 |

FLT 63 RUN1

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 1 TIME 53718.300 MU= .151 CLP= .00423 TEMP(U60)= 9.2 C = 48.63 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 240. | -.866 | -.944 | -.615 | | -.456 | -.336 | -.176 | .061 | .498 | .128 | .085 | -.023 | -.006 | -.053 |
| 242. | -.920 | -.952 | -.629 | | -.464 | -.338 | -.177 | .061 | .528 | .133 | .096 | -.015 | -.006 | -.054 |
| 244. | -.953 | -.982 | -.642 | | -.463 | -.341 | -.178 | .062 | .534 | .134 | .097 | -.006 | -.006 | -.054 |
| 246. | -1.009 | -1.010 | -.646 | | -.478 | -.343 | -.179 | .062 | .566 | .158 | .106 | -.006 | .001 | -.054 |
| 248. | -1.066 | -1.016 | -.646 | | -.470 | -.344 | -.180 | .062 | .600 | .161 | .116 | -.007 | .011 | -.055 |
| 250. | -1.123 | -1.024 | -.663 | | -.469 | -.347 | -.182 | .066 | .605 | .188 | .130 | -.007 | .009 | -.056 |
| 252. | -1.180 | -1.054 | -.676 | | -.482 | -.349 | -.176 | .075 | .637 | .188 | .139 | .003 | .009 | -.059 |
| 254. | -1.237 | -1.083 | -.688 | | -.475 | -.349 | -.160 | .075 | .670 | .215 | .146 | .010 | .011 | -.055 |
| 256. | -1.294 | -1.112 | -.697 | | -.476 | -.352 | -.161 | .067 | .675 | .218 | .159 | .010 | .009 | -.057 |
| 258. | -1.358 | -1.141 | -.703 | | -.486 | -.354 | -.162 | .072 | .709 | .245 | .172 | .021 | .018 | -.060 |
| 260. | -1.458 | -1.162 | -.721 | | -.491 | -.353 | -.162 | .074 | .742 | .271 | .175 | .027 | .028 | -.058 |
| 262. | -1.524 | -1.173 | -.728 | | -.493 | -.353 | -.162 | .082 | .771 | .296 | .187 | .027 | .029 | -.056 |
| 264. | -1.621 | -1.192 | -.724 | | -.479 | -.336 | -.162 | .082 | .777 | .300 | .193 | .027 | .029 | -.056 |
| 266. | -1.657 | -1.184 | -.712 | | -.468 | -.329 | -.163 | .087 | .805 | .324 | .213 | .027 | .026 | -.058 |
| 268. | -1.603 | -1.150 | -.669 | | -.471 | -.328 | -.163 | .087 | .770 | .318 | .213 | .027 | .015 | -.059 |
| 270. | -1.448 | -1.079 | -.647 | | -.451 | -.329 | -.163 | .088 | .620 | .275 | .189 | .013 | -.004 | -.059 |
| 272. | -1.219 | -.977 | -.586 | | -.447 | -.308 | -.151 | .089 | .509 | .174 | .119 | -.004 | -.009 | -.060 |
| 274. | -.981 | -.898 | -.583 | | -.445 | -.302 | -.140 | .079 | .445 | .100 | .077 | -.022 | -.024 | -.060 |
| 276. | -.824 | -.858 | -.563 | | -.428 | -.300 | -.154 | .071 | .391 | .054 | .052 | -.070 | -.041 | -.060 |
| 278. | -.738 | -.831 | -.541 | | -.424 | -.322 | -.163 | .069 | .369 | .035 | .033 | -.075 | -.044 | -.058 |
| 280. | -.694 | -.818 | -.539 | | -.443 | -.326 | -.178 | .057 | .368 | .026 | .014 | -.075 | -.044 | -.058 |
| 282. | -.678 | -.816 | -.538 | | -.424 | -.326 | -.185 | .038 | .367 | .009 | -.005 | -.075 | -.044 | -.046 |
| 284. | -.676 | -.813 | -.536 | | -.421 | -.325 | -.184 | .033 | .366 | .019 | -.006 | -.074 | -.044 | -.038 |
| 286. | -.673 | -.810 | -.536 | | -.440 | -.349 | -.184 | .046 | .379 | .035 | -.006 | -.074 | -.027 | -.038 |
| 288. | -.684 | -.822 | -.552 | | -.439 | -.324 | -.183 | .050 | .394 | .035 | -.006 | -.074 | -.026 | -.051 |
| 290. | -.693 | -.827 | -.549 | | -.437 | -.321 | -.182 | .064 | .392 | .035 | -.004 | -.073 | -.026 | -.057 |
| 292. | -.689 | -.840 | -.547 | | -.435 | -.346 | -.181 | .067 | .406 | .034 | .030 | -.073 | -.026 | -.072 |
| 294. | -.686 | -.843 | -.544 | | -.433 | -.317 | -.180 | .067 | .435 | .034 | .028 | -.073 | -.025 | -.076 |
| 296. | -.682 | -.838 | -.541 | | -.430 | -.317 | -.179 | .067 | .445 | .034 | .012 | -.072 | -.025 | -.076 |
| 298. | -.677 | -.833 | -.542 | | -.428 | -.338 | -.178 | .066 | .443 | .034 | .012 | -.072 | -.025 | -.059 |

FLT 63 RUN1

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 1 TIME 53718.300 MU= .151 CLP= .00423 TEMP(U60)= 9.2 C = 48.63 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 300. | -.673 | -.846 | -.553 | | -.425 | -.311 | -.177 | .066 | .440 | .034 | .012 | -.071 | -.025 | -.072 |
| 302. | -.668 | -.845 | -.549 | | -.422 | -.313 | -.176 | .065 | .437 | .033 | .012 | -.071 | -.025 | -.058 |
| 304. | -.663 | -.839 | -.545 | | -.419 | -.333 | -.174 | .065 | .433 | .033 | .012 | -.070 | -.025 | -.072 |
| 306. | -.658 | -.852 | -.541 | | -.415 | -.330 | -.173 | .064 | .430 | .033 | .011 | -.070 | -.027 | -.073 |
| 308. | -.653 | -.848 | -.537 | | -.412 | -.328 | -.172 | .064 | .426 | .033 | .011 | -.069 | -.041 | -.073 |
| 310. | -.647 | -.862 | -.547 | | -.414 | -.325 | -.170 | .080 | .423 | .032 | .011 | -.069 | -.037 | -.072 |
| 312. | -.661 | -.856 | -.564 | | -.425 | -.322 | -.169 | .079 | .419 | .032 | .011 | -.068 | -.024 | -.072 |
| 314. | -.659 | -.870 | -.559 | | -.421 | -.319 | -.167 | .078 | .415 | .032 | .011 | -.067 | -.028 | -.071 |
| 316. | -.653 | -.862 | -.563 | | -.424 | -.316 | -.166 | .077 | .411 | .050 | .011 | -.067 | -.039 | -.070 |
| 318. | -.667 | -.876 | -.576 | | -.425 | -.321 | -.164 | .077 | .431 | .054 | .017 | -.066 | -.039 | -.070 |
| 320. | -.662 | -.889 | -.579 | | -.417 | -.334 | -.162 | .076 | .430 | .054 | .027 | -.066 | -.038 | -.067 |
| 322. | -.656 | -.901 | -.573 | | -.424 | -.331 | -.165 | .075 | .426 | .053 | .027 | -.065 | -.032 | -.051 |
| 324. | -.671 | -.893 | -.567 | | -.419 | -.327 | -.179 | .074 | .422 | .053 | .026 | -.064 | -.022 | -.050 |
| 326. | -.664 | -.903 | -.572 | | -.424 | -.324 | -.177 | .074 | .417 | .052 | .026 | -.063 | -.029 | -.053 |
| 328. | -.657 | -.896 | -.572 | | -.429 | -.331 | -.175 | .073 | .413 | .051 | .017 | -.063 | -.037 | -.066 |
| 330. | -.649 | -.907 | -.566 | | -.424 | -.340 | -.173 | .072 | .409 | .051 | .010 | -.062 | -.036 | -.065 |
| 332. | -.642 | -.914 | -.571 | | -.419 | -.336 | -.171 | .071 | .429 | .050 | .010 | -.061 | -.036 | -.065 |
| 334. | -.635 | -.908 | -.570 | | -.425 | -.332 | -.169 | .076 | .423 | .050 | .010 | -.061 | -.036 | -.064 |
| 336. | -.628 | -.913 | -.575 | | -.427 | -.328 | -.167 | .084 | .395 | .049 | .000 | -.060 | -.035 | -.063 |
| 338. | -.617 | -.908 | -.573 | | -.422 | -.324 | -.166 | .083 | .390 | .049 | -.005 | -.059 | -.043 | -.062 |
| 340. | -.593 | -.911 | -.567 | | -.417 | -.321 | -.164 | .082 | .386 | .048 | -.005 | -.059 | -.048 | -.062 |
| 342. | -.582 | -.901 | -.562 | | -.413 | -.317 | -.162 | .081 | .381 | .045 | .005 | -.058 | -.048 | -.061 |
| 344. | -.550 | -.890 | -.554 | | -.409 | -.313 | -.160 | .078 | .372 | .026 | .007 | -.057 | -.046 | -.059 |
| 346. | -.509 | -.880 | -.549 | | -.404 | -.309 | -.158 | .077 | .349 | .023 | -.002 | -.067 | -.046 | -.058 |
| 348. | -.484 | -.869 | -.556 | | -.400 | -.305 | -.156 | .076 | .344 | .006 | -.018 | -.068 | -.054 | -.058 |
| 350. | -.458 | -.867 | -.549 | | -.408 | -.316 | -.154 | .074 | .334 | .002 | -.021 | -.078 | -.047 | -.056 |
| 352. | -.427 | -.867 | -.529 | | -.392 | -.319 | -.162 | .075 | .307 | -.012 | -.018 | -.090 | -.044 | -.057 |
| 354. | -.384 | -.848 | -.519 | | -.397 | -.315 | -.167 | .076 | .281 | -.018 | -.029 | -.091 | -.044 | -.057 |
| 356. | -.349 | -.829 | -.515 | | -.393 | -.328 | -.176 | .077 | .255 | -.036 | -.040 | -.090 | -.055 | -.057 |
| 358. | -.319 | -.819 | -.509 | | -.404 | -.327 | -.169 | .075 | .222 | -.055 | -.055 | -.100 | -.056 | -.056 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 6 TIME 54157.800 MU= .257 CLP= .00427 TEMP(U60)= 10.6 C = 50.99 F

| X/C= AZIMUTH | UPPER SURFACE CP VALUES .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | LOWER SURFACE CP VALUES .02 | .10 | .20 | .50 | .70 | .90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0. | -.523 | -.867 | -.524 | | -.378 | -.307 | -.157 | .071 | .352 | .041 | -.010 | -.077 | -.048 | -.064 |
| 2. | -.488 | -.864 | -.519 | | -.386 | -.302 | -.154 | .070 | .331 | .021 | -.010 | -.075 | -.048 | -.063 |
| 4. | -.461 | -.850 | -.519 | | -.393 | -.312 | -.151 | .066 | .303 | .014 | -.015 | -.076 | -.056 | -.061 |
| 6. | -.422 | -.848 | -.518 | | -.386 | -.309 | -.163 | .064 | .290 | .002 | -.027 | -.086 | -.055 | -.059 |
| 8. | -.379 | -.849 | -.526 | | -.378 | -.319 | -.160 | .063 | .270 | -.004 | -.039 | -.096 | -.054 | -.071 |
| 10. | -.351 | -.849 | -.516 | | -.371 | -.313 | -.157 | .062 | .245 | -.016 | -.051 | -.106 | -.053 | -.070 |
| 12. | -.315 | -.835 | -.512 | | -.369 | -.311 | -.154 | .072 | .235 | -.020 | -.058 | -.111 | -.055 | -.069 |
| 14. | -.290 | -.835 | -.510 | | -.371 | -.318 | -.152 | .071 | .216 | -.033 | -.061 | -.109 | -.065 | -.068 |
| 16. | -.255 | -.850 | -.507 | | -.369 | -.313 | -.151 | .071 | .193 | -.048 | -.067 | -.107 | -.072 | -.066 |
| 18. | -.219 | -.850 | -.505 | | -.371 | -.313 | -.160 | .079 | .186 | -.064 | -.075 | -.110 | -.071 | -.065 |
| 20. | -.184 | -.851 | -.502 | | -.370 | -.318 | -.157 | .078 | .167 | -.065 | -.091 | -.118 | -.073 | -.064 |
| 22. | -.165 | -.851 | -.500 | | -.371 | -.319 | -.155 | .076 | .146 | -.077 | -.101 | -.126 | -.078 | -.065 |
| 24. | -.118 | -.853 | -.491 | | -.371 | -.323 | -.155 | .075 | .125 | -.091 | -.110 | -.134 | -.077 | -.074 |
| 26. | -.101 | -.866 | -.482 | | -.372 | -.325 | -.163 | .077 | .088 | -.105 | -.119 | -.136 | -.080 | -.072 |
| 28. | -.070 | -.864 | -.474 | | -.371 | -.329 | -.160 | .083 | .069 | -.118 | -.126 | -.140 | -.085 | -.072 |
| 30. | -.040 | -.854 | -.482 | | -.377 | -.324 | -.158 | .084 | .051 | -.130 | -.128 | -.147 | -.084 | -.071 |
| 32. | -.012 | -.851 | -.482 | | -.377 | -.327 | -.160 | .086 | .033 | -.129 | -.132 | -.154 | -.088 | -.070 |
| 34. | .014 | -.839 | -.484 | | -.378 | -.338 | -.166 | .091 | .016 | -.141 | -.140 | -.155 | -.091 | -.069 |
| 36. | .030 | -.827 | -.481 | | -.378 | -.339 | -.163 | .089 | -.001 | -.152 | -.149 | -.153 | -.089 | -.068 |
| 38. | .054 | -.816 | -.474 | | -.374 | -.343 | -.161 | .086 | -.017 | -.152 | -.158 | -.151 | -.093 | -.066 |
| 40. | .067 | -.806 | -.476 | | -.377 | -.343 | -.159 | .089 | -.033 | -.164 | -.165 | -.149 | -.095 | -.065 |
| 42. | .082 | -.795 | -.472 | | -.383 | -.339 | -.157 | .093 | -.048 | -.172 | -.165 | -.147 | -.094 | -.065 |
| 44. | .104 | -.786 | -.466 | | -.390 | -.345 | -.161 | .092 | -.063 | -.173 | -.171 | -.159 | -.093 | -.068 |
| 46. | .115 | -.777 | -.479 | | -.387 | -.354 | -.164 | .091 | -.078 | -.181 | -.178 | -.167 | -.098 | -.073 |
| 48. | .127 | -.762 | -.512 | | -.392 | -.354 | -.163 | .095 | -.088 | -.182 | -.177 | -.174 | -.099 | -.072 |
| 50. | .143 | -.748 | -.556 | | -.398 | -.350 | -.161 | .097 | -.092 | -.190 | -.183 | -.173 | -.105 | -.066 |
| 52. | .161 | -.740 | -.610 | | -.396 | -.357 | -.159 | .102 | -.106 | -.192 | -.190 | -.171 | -.105 | -.067 |
| 54. | .172 | -.727 | -.653 | | -.392 | -.356 | -.158 | .104 | -.120 | -.202 | -.197 | -.185 | -.104 | -.064 |
| 56. | .183 | -.715 | -.685 | | -.398 | -.364 | -.156 | .103 | -.127 | -.208 | -.204 | -.184 | -.096 | -.060 |
| 58. | .187 | -.709 | -.708 | | -.395 | -.362 | -.155 | .108 | -.133 | -.206 | -.203 | -.182 | -.102 | -.066 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 6 TIME 54157.800 MU= .257 CLP= .00427 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 60. | .192 | -.703 | -.730 | | -.392 | -.359 | -.154 | .109 | -.146 | -.210 | -.210 | -.181 | -.102 | -.068 |
| 62. | .202 | -.697 | -.744 | | -.398 | -.356 | -.144 | .108 | -.159 | -.221 | -.208 | -.187 | -.101 | -.068 |
| 64. | .213 | -.685 | -.756 | | -.396 | -.366 | -.141 | .107 | -.172 | -.225 | -.215 | -.193 | -.100 | -.060 |
| 66. | .216 | -.677 | -.760 | | -.394 | -.364 | -.140 | .114 | -.178 | -.224 | -.213 | -.192 | -.100 | -.058 |
| 68. | .222 | -.673 | -.765 | | -.401 | -.361 | -.139 | .114 | -.185 | -.222 | -.211 | -.191 | -.099 | -.057 |
| 70. | .225 | -.660 | -.770 | | -.405 | -.361 | -.138 | .113 | -.189 | -.221 | -.203 | -.189 | -.098 | -.057 |
| 72. | .223 | -.655 | -.772 | | -.386 | -.368 | -.138 | .113 | -.188 | -.220 | -.202 | -.187 | -.098 | -.057 |
| 74. | .231 | -.642 | -.769 | | -.383 | -.358 | -.137 | .112 | -.187 | -.219 | -.203 | -.182 | -.097 | -.056 |
| 76. | .241 | -.648 | -.762 | | -.376 | -.364 | -.136 | .104 | -.196 | -.226 | -.212 | -.187 | -.097 | -.056 |
| 78. | .252 | -.627 | -.754 | | -.379 | -.353 | -.136 | .104 | -.219 | -.245 | -.225 | -.186 | -.097 | -.056 |
| 80. | .263 | -.624 | -.748 | | -.371 | -.352 | -.136 | .103 | -.236 | -.259 | -.236 | -.188 | -.096 | -.056 |
| 82. | .273 | -.622 | -.737 | | -.367 | -.355 | -.136 | .103 | -.260 | -.278 | -.251 | -.198 | -.096 | -.047 |
| 84. | .284 | -.610 | -.727 | | -.360 | -.366 | -.145 | .103 | -.297 | -.292 | -.264 | -.207 | -.096 | -.046 |
| 86. | .295 | -.599 | -.717 | | -.360 | -.374 | -.145 | .103 | -.326 | -.312 | -.275 | -.206 | -.096 | -.038 |
| 88. | .306 | -.598 | -.707 | | -.359 | -.373 | -.145 | .104 | -.353 | -.325 | -.288 | -.206 | -.096 | -.038 |
| 90. | .317 | -.587 | -.693 | | -.359 | -.373 | -.145 | .108 | -.381 | -.347 | -.296 | -.206 | -.096 | -.038 |
| 92. | .329 | -.576 | -.680 | | -.359 | -.373 | -.145 | .103 | -.408 | -.360 | -.300 | -.206 | -.096 | -.038 |
| 94. | .340 | -.567 | -.673 | | -.359 | -.374 | -.145 | .103 | -.449 | -.382 | -.304 | -.207 | -.096 | -.038 |
| 96. | .341 | -.568 | -.665 | | -.366 | -.374 | -.145 | .103 | -.476 | -.395 | -.309 | -.207 | -.096 | -.038 |
| 98. | .353 | -.567 | -.656 | | -.377 | -.374 | -.145 | .100 | -.505 | -.407 | -.324 | -.207 | -.095 | -.037 |
| 100. | .364 | -.557 | -.649 | | -.380 | -.376 | -.146 | .103 | -.533 | -.420 | -.334 | -.208 | -.096 | -.038 |
| 102. | .367 | -.551 | -.628 | | -.388 | -.377 | -.146 | .104 | -.549 | -.432 | -.335 | -.208 | -.097 | -.038 |
| 104. | .377 | -.546 | -.569 | | -.392 | -.378 | -.142 | .101 | -.577 | -.444 | -.325 | -.209 | -.092 | -.035 |
| 106. | .381 | -.530 | -.498 | | -.387 | -.380 | -.142 | .100 | -.596 | -.448 | -.327 | -.210 | -.090 | -.030 |
| 108. | .392 | -.517 | -.434 | | -.386 | -.374 | -.148 | .101 | -.623 | -.460 | -.337 | -.211 | -.090 | -.030 |
| 110. | .394 | -.502 | -.387 | | -.388 | -.363 | -.149 | .098 | -.641 | -.462 | -.341 | -.206 | -.091 | -.030 |
| 112. | .396 | -.494 | -.374 | | -.390 | -.361 | -.144 | .098 | -.662 | -.467 | -.343 | -.199 | -.085 | -.030 |
| 114. | .399 | -.485 | -.359 | | -.385 | -.354 | -.140 | .099 | -.694 | -.476 | -.345 | -.199 | -.084 | -.030 |
| 116. | .401 | -.477 | -.360 | | -.386 | -.364 | -.141 | .094 | -.727 | -.471 | -.347 | -.194 | -.084 | -.031 |
| 118. | .404 | -.469 | -.363 | | -.389 | -.359 | -.142 | .092 | -.761 | -.474 | -.327 | -.194 | -.085 | -.031 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 6 TIME 54157.800 MU= .257 CLP= .00427 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 120. | .407 | -.461 | -.365 | | -.383 | -.359 | -.143 | .093 | -.796 | -.478 | -.319 | -.196 | -.079 | -.031 |
| 122. | .411 | -.454 | -.367 | | -.375 | -.351 | -.144 | .093 | -.826 | -.477 | -.321 | -.197 | -.078 | -.031 |
| 124. | .408 | -.453 | -.343 | | -.378 | -.352 | -.145 | .094 | -.842 | -.474 | -.324 | -.199 | -.079 | -.032 |
| 126. | .406 | -.450 | -.345 | | -.382 | -.356 | -.147 | .089 | -.843 | -.473 | -.318 | -.193 | -.072 | -.032 |
| 128. | .403 | -.450 | -.340 | | -.375 | -.347 | -.148 | .088 | -.822 | -.471 | -.312 | -.187 | -.072 | -.032 |
| 130. | .402 | -.446 | -.344 | | -.378 | -.350 | -.150 | .089 | -.777 | -.469 | -.307 | -.187 | -.073 | -.033 |
| 132. | .399 | -.448 | -.346 | | -.373 | -.340 | -.151 | .089 | -.724 | -.461 | -.301 | -.175 | -.074 | -.033 |
| 134. | .390 | -.444 | -.346 | | -.376 | -.344 | -.143 | .091 | -.678 | -.454 | -.297 | -.177 | -.066 | -.025 |
| 136. | .390 | -.446 | -.349 | | -.375 | -.345 | -.142 | .076 | -.658 | -.446 | -.301 | -.175 | -.064 | -.029 |
| 138. | .386 | -.441 | -.351 | | -.377 | -.337 | -.144 | .076 | -.651 | -.438 | -.285 | -.163 | -.065 | -.022 |
| 140. | .377 | -.445 | -.358 | | -.370 | -.341 | -.147 | .085 | -.643 | -.430 | -.271 | -.164 | -.068 | -.024 |
| 142. | .369 | -.451 | -.359 | | -.378 | -.329 | -.148 | .078 | -.635 | -.413 | -.275 | -.157 | -.065 | -.021 |
| 144. | .350 | -.457 | -.360 | | -.376 | -.324 | -.151 | .078 | -.616 | -.400 | -.265 | -.153 | -.061 | -.035 |
| 146. | .338 | -.463 | -.358 | | -.369 | -.328 | -.152 | .079 | -.604 | -.391 | -.256 | -.155 | -.062 | -.025 |
| 148. | .329 | -.457 | -.363 | | -.367 | -.329 | -.143 | .080 | -.595 | -.383 | -.246 | -.157 | -.063 | -.037 |
| 150. | .320 | -.464 | -.364 | | -.372 | -.323 | -.145 | .081 | -.573 | -.374 | -.242 | -.156 | -.061 | -.037 |
| 152. | .297 | -.471 | -.363 | | -.373 | -.328 | -.147 | .081 | -.562 | -.353 | -.229 | -.153 | -.055 | -.038 |
| 154. | .286 | -.478 | -.369 | | -.367 | -.328 | -.150 | .074 | -.537 | -.341 | -.222 | -.151 | -.053 | -.038 |
| 156. | .261 | -.486 | -.375 | | -.365 | -.323 | -.152 | .075 | -.510 | -.331 | -.215 | -.143 | -.047 | -.039 |
| 158. | .250 | -.494 | -.381 | | -.371 | -.329 | -.155 | .074 | -.482 | -.321 | -.207 | -.141 | -.048 | -.040 |
| 160. | .224 | -.503 | -.388 | | -.378 | -.327 | -.157 | .067 | -.452 | -.311 | -.200 | -.132 | -.049 | -.040 |
| 162. | .211 | -.511 | -.395 | | -.377 | -.324 | -.156 | .068 | -.422 | -.285 | -.192 | -.125 | -.049 | -.041 |
| 164. | .184 | -.520 | -.402 | | -.378 | -.329 | -.149 | .069 | -.391 | -.273 | -.177 | -.121 | -.045 | -.038 |
| 166. | .169 | -.530 | -.409 | | -.377 | -.326 | -.152 | .071 | -.359 | -.262 | -.164 | -.113 | -.040 | -.034 |
| 168. | .139 | -.540 | -.416 | | -.378 | -.324 | -.154 | .067 | -.323 | -.249 | -.155 | -.111 | -.035 | -.039 |
| 170. | .110 | -.550 | -.424 | | -.385 | -.330 | -.157 | .062 | -.270 | -.235 | -.146 | -.113 | -.031 | -.031 |
| 172. | .088 | -.560 | -.432 | | -.383 | -.325 | -.160 | .063 | -.234 | -.207 | -.136 | -.107 | -.031 | -.032 |
| 174. | .041 | -.571 | -.441 | | -.386 | -.325 | -.156 | .064 | -.196 | -.193 | -.126 | -.089 | -.024 | -.032 |
| 176. | .011 | -.589 | -.449 | | -.393 | -.331 | -.159 | .065 | -.156 | -.178 | -.115 | -.085 | -.020 | -.033 |
| 178. | -.013 | -.611 | -.458 | | -.401 | -.324 | -.161 | .060 | -.115 | -.163 | -.094 | -.087 | -.021 | -.033 |

FLT 63 RUN6

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 6 TIME 54157.800 MU= .257 CLP= .00427 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 180. | -.057 | -.623 | -.467 | | -.409 | -.325 | -.157 | .055 | -.073 | -.142 | -.080 | -.078 | -.012 | -.034 |
| 182. | -.109 | -.644 | -.477 | | -.417 | -.332 | -.160 | .057 | -.021 | -.112 | -.068 | -.067 | -.009 | -.035 |
| 184. | -.150 | -.676 | -.486 | | -.412 | -.338 | -.163 | .058 | .041 | -.094 | -.055 | -.056 | -.009 | -.035 |
| 186. | -.201 | -.699 | -.497 | | -.418 | -.327 | -.167 | .059 | .081 | -.076 | -.042 | -.044 | -.009 | -.036 |
| 188. | -.257 | -.713 | -.522 | | -.427 | -.331 | -.170 | .060 | .117 | -.057 | -.028 | -.044 | -.010 | -.037 |
| 190. | -.304 | -.740 | -.533 | | -.419 | -.338 | -.174 | .061 | .169 | -.037 | -.014 | -.031 | .003 | -.038 |
| 192. | -.364 | -.763 | -.545 | | -.427 | -.345 | -.177 | .063 | .212 | -.016 | .001 | -.032 | .004 | -.038 |
| 194. | -.424 | -.793 | -.556 | | -.436 | -.353 | -.181 | .064 | .242 | .005 | .015 | -.033 | .004 | -.039 |
| 196. | -.490 | -.816 | -.568 | | -.446 | -.337 | -.185 | .065 | .288 | .028 | .017 | -.034 | .004 | -.040 |
| 198. | -.554 | -.849 | -.580 | | -.453 | -.344 | -.172 | .067 | .333 | .039 | .032 | -.034 | .005 | -.041 |
| 200. | -.612 | -.872 | -.592 | | -.446 | -.349 | -.172 | .068 | .368 | .053 | .037 | -.030 | .020 | -.042 |
| 202. | -.688 | -.891 | -.604 | | -.455 | -.334 | -.176 | .070 | .421 | .078 | .066 | -.006 | .020 | -.043 |
| 204. | -.757 | -.928 | -.617 | | -.461 | -.341 | -.180 | .055 | .450 | .089 | .071 | -.006 | .021 | -.044 |
| 206. | -.822 | -.951 | -.630 | | -.454 | -.348 | -.162 | .056 | .480 | .107 | .090 | -.006 | .021 | -.045 |
| 208. | -.889 | -.971 | -.643 | | -.463 | -.350 | -.165 | .057 | .520 | .117 | .105 | -.001 | .022 | -.045 |
| 210. | -.958 | -.990 | -.656 | | -.473 | -.336 | -.169 | .058 | .538 | .138 | .113 | .010 | .022 | -.046 |
| 212. | -1.029 | -1.034 | -.669 | | -.476 | -.343 | -.172 | .059 | .573 | .148 | .127 | .011 | .022 | -.047 |
| 214. | -1.103 | -1.055 | -.683 | | -.470 | -.350 | -.176 | .061 | .591 | .172 | .130 | .011 | .023 | -.048 |
| 216. | -1.179 | -1.076 | -.696 | | -.479 | -.357 | -.176 | .062 | .603 | .181 | .140 | .018 | .023 | -.049 |
| 218. | -1.257 | -1.072 | -.698 | | -.489 | -.353 | -.158 | .063 | .643 | .208 | .154 | .029 | .024 | -.050 |
| 220. | -1.311 | -1.092 | -.701 | | -.488 | -.342 | -.161 | .064 | .659 | .215 | .157 | .029 | .024 | -.051 |
| 222. | -1.391 | -1.113 | -.719 | | -.484 | -.348 | -.164 | .065 | .671 | .219 | .160 | .030 | .025 | -.052 |
| 224. | -1.421 | -1.133 | -.730 | | -.496 | -.353 | -.167 | .063 | .683 | .221 | .169 | .031 | .027 | -.052 |
| 226. | -1.557 | -1.153 | -.741 | | -.492 | -.359 | -.169 | .060 | .696 | .227 | .182 | .031 | .028 | -.050 |
| 228. | -1.584 | -1.173 | -.735 | | -.485 | -.367 | -.173 | .069 | .742 | .261 | .190 | .032 | .026 | -.055 |
| 230. | -1.615 | -1.193 | -.739 | | -.491 | -.356 | -.177 | .072 | .720 | .266 | .196 | .032 | .025 | -.057 |
| 232. | -1.673 | -1.204 | -.751 | | -.498 | -.348 | -.180 | .077 | .732 | .271 | .201 | .046 | .025 | -.060 |
| 234. | -1.725 | -1.202 | -.765 | | -.488 | -.354 | -.171 | .078 | .744 | .275 | .204 | .053 | .025 | -.061 |
| 236. | -1.758 | -1.220 | -.758 | | -.490 | -.358 | -.157 | .077 | .754 | .278 | .204 | .054 | .027 | -.060 |
| 238. | -1.807 | -1.237 | -.764 | | -.498 | -.363 | -.159 | .075 | .765 | .282 | .205 | .055 | .028 | -.059 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 6 TIME 54157.800 MU= .257 CLP= .00427 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 240. | -1.832 | -1.242 | -.774 | | -.505 | -.368 | -.161 | .076 | .776 | .286 | .208 | .056 | .028 | -.060 |
| 242. | -1.856 | -1.240 | -.784 | | -.511 | -.347 | -.163 | .077 | .786 | .290 | .211 | .057 | .029 | -.048 |
| 244. | -1.879 | -1.255 | -.770 | | -.517 | -.342 | -.165 | .077 | .795 | .293 | .213 | .057 | .029 | -.036 |
| 246. | -1.900 | -1.269 | -.777 | | -.523 | -.345 | -.167 | .078 | .805 | .297 | .216 | .058 | .030 | -.036 |
| 248. | -1.921 | -1.266 | -.785 | | -.529 | -.349 | -.169 | .079 | .813 | .300 | .218 | .038 | .030 | -.052 |
| 250. | -1.939 | -1.263 | -.766 | | -.508 | -.353 | -.170 | .080 | .821 | .303 | .220 | .037 | .030 | -.064 |
| 252. | -1.957 | -1.274 | -.772 | | -.537 | -.356 | -.172 | .081 | .811 | .305 | .198 | .037 | .030 | -.064 |
| 254. | -1.973 | -1.284 | -.779 | | -.515 | -.359 | -.173 | .081 | .794 | .308 | .199 | .037 | .031 | -.065 |
| 256. | -1.968 | -1.272 | -.784 | | -.517 | -.361 | -.174 | .082 | .799 | .310 | .201 | .038 | .031 | -.065 |
| 258. | -1.964 | -1.245 | -.785 | | -.492 | -.363 | -.176 | .082 | .804 | .312 | .202 | .038 | .031 | -.066 |
| 260. | -1.975 | -1.241 | -.760 | | -.522 | -.365 | -.177 | .062 | .809 | .314 | .203 | .038 | .031 | -.066 |
| 262. | -1.961 | -1.246 | -.740 | | -.499 | -.367 | -.177 | .059 | .812 | .315 | .204 | .038 | .031 | -.066 |
| 264. | -1.955 | -1.251 | -.743 | | -.524 | -.368 | -.178 | .059 | .815 | .316 | .205 | .038 | .032 | -.067 |
| 266. | -1.959 | -1.254 | -.745 | | -.504 | -.369 | -.178 | .059 | .817 | .317 | .205 | .038 | .032 | -.067 |
| 268. | -1.936 | -1.256 | -.747 | | -.524 | -.370 | -.179 | .059 | .818 | .317 | .205 | .038 | .032 | -.067 |
| 270. | -1.928 | -1.257 | -.751 | | -.501 | -.370 | -.179 | .059 | .818 | .292 | .204 | .039 | .032 | -.067 |
| 272. | -1.870 | -1.256 | -.751 | | -.504 | -.368 | -.177 | .052 | .818 | .280 | .199 | .039 | .029 | -.064 |
| 274. | -1.911 | -1.254 | -.750 | | -.503 | -.367 | -.177 | .052 | .816 | .280 | .199 | .039 | .010 | -.063 |
| 276. | -1.858 | -1.251 | -.746 | | -.502 | -.366 | -.177 | .052 | .814 | .279 | .199 | .030 | .010 | -.063 |
| 278. | -1.905 | -1.213 | -.745 | | -.499 | -.366 | -.176 | .053 | .812 | .279 | .200 | .015 | .016 | -.063 |
| 280. | -1.872 | -1.208 | -.744 | | -.497 | -.364 | -.176 | .056 | .808 | .276 | .198 | .015 | .025 | -.065 |
| 282. | -1.793 | -1.202 | -.738 | | -.498 | -.360 | -.173 | .046 | .804 | .275 | .193 | .015 | .011 | -.060 |
| 284. | -1.778 | -1.194 | -.736 | | -.493 | -.359 | -.173 | .051 | .799 | .274 | .195 | .015 | .010 | -.062 |
| 286. | -1.766 | -1.186 | -.733 | | -.491 | -.356 | -.172 | .049 | .793 | .271 | .191 | .015 | .001 | -.061 |
| 288. | -1.750 | -1.177 | -.727 | | -.504 | -.352 | -.170 | .043 | .786 | .268 | .186 | .015 | -.011 | -.058 |
| 290. | -1.702 | -1.166 | -.715 | | -.498 | -.349 | -.168 | .043 | .780 | .266 | .171 | .015 | -.011 | -.057 |
| 292. | -1.686 | -1.154 | -.705 | | -.476 | -.348 | -.167 | .047 | .773 | .266 | .165 | .014 | -.014 | -.059 |
| 294. | -1.663 | -1.142 | -.697 | | -.467 | -.346 | -.167 | .055 | .765 | .263 | .168 | .014 | -.016 | -.062 |
| 296. | -1.611 | -1.129 | -.690 | | -.462 | -.342 | -.165 | .055 | .751 | .257 | .166 | -.001 | -.016 | -.062 |
| 298. | -1.558 | -1.106 | -.691 | | -.456 | -.338 | -.163 | .054 | .708 | .223 | .164 | -.008 | -.016 | -.061 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 6 TIME 54157.800 MU= .257 CLP= .00427 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 300. | -1.496 | -1.071 | -.675 | | -.459 | -.330 | -.159 | .055 | .698 | .218 | .134 | -.007 | -.011 | -.057 |
| 302. | -1.411 | -1.056 | -.642 | | -.447 | -.327 | -.157 | .054 | .681 | .212 | .133 | -.007 | -.013 | -.054 |
| 304. | -1.327 | -1.028 | -.629 | | -.438 | -.324 | -.157 | .064 | .642 | .183 | .135 | -.008 | -.015 | -.059 |
| 306. | -1.254 | -.996 | -.624 | | -.432 | -.319 | -.154 | .072 | .632 | .172 | .115 | -.025 | -.015 | -.058 |
| 308. | -1.192 | -.981 | -.622 | | -.450 | -.313 | -.168 | .055 | .622 | .145 | .105 | -.045 | -.029 | -.055 |
| 310. | -1.123 | -.966 | -.613 | | -.431 | -.331 | -.174 | .050 | .599 | .141 | .075 | -.046 | -.029 | -.050 |
| 312. | -1.075 | -.950 | -.602 | | -.444 | -.331 | -.170 | .038 | .566 | .129 | .071 | -.045 | -.027 | -.047 |
| 314. | -1.027 | -.934 | -.592 | | -.439 | -.325 | -.168 | .031 | .557 | .107 | .069 | -.044 | -.044 | -.046 |
| 316. | -.994 | -.917 | -.583 | | -.431 | -.320 | -.165 | .030 | .547 | .106 | .048 | -.043 | -.046 | -.045 |
| 318. | -.961 | -.901 | -.593 | | -.424 | -.314 | -.162 | .030 | .537 | .104 | .047 | -.042 | -.045 | -.044 |
| 320. | -.931 | -.902 | -.582 | | -.439 | -.308 | -.159 | .029 | .527 | .102 | .045 | -.042 | -.044 | -.044 |
| 322. | -.897 | -.894 | -.572 | | -.431 | -.331 | -.156 | .045 | .517 | .100 | .026 | -.041 | -.043 | -.043 |
| 324. | -.870 | -.895 | -.561 | | -.423 | -.325 | -.153 | .047 | .507 | .098 | .026 | -.040 | -.043 | -.042 |
| 326. | -.853 | -.884 | -.560 | | -.415 | -.318 | -.171 | .046 | .498 | .096 | .025 | -.039 | -.042 | -.041 |
| 328. | -.836 | -.886 | -.579 | | -.410 | -.312 | -.170 | .045 | .498 | .094 | .025 | -.042 | -.041 | -.040 |
| 330. | -.819 | -.893 | -.568 | | -.419 | -.306 | -.166 | .044 | .478 | .092 | .024 | -.054 | -.040 | -.039 |
| 332. | -.803 | -.879 | -.560 | | -.416 | -.304 | -.163 | .043 | .489 | .090 | .024 | -.053 | -.039 | -.039 |
| 334. | -.787 | -.881 | -.558 | | -.421 | -.320 | -.160 | .043 | .488 | .090 | .026 | -.052 | -.040 | -.056 |
| 336. | -.790 | -.887 | -.560 | | -.408 | -.316 | -.160 | .055 | .478 | .087 | .030 | -.052 | -.042 | -.062 |
| 338. | -.778 | -.891 | -.559 | | -.406 | -.313 | -.174 | .056 | .468 | .085 | .022 | -.050 | -.041 | -.055 |
| 340. | -.762 | -.895 | -.556 | | -.404 | -.324 | -.170 | .055 | .458 | .083 | .022 | -.049 | -.047 | -.071 |
| 342. | -.746 | -.898 | -.563 | | -.415 | -.317 | -.167 | .054 | .449 | .082 | .021 | -.048 | -.036 | -.070 |
| 344. | -.731 | -.901 | -.569 | | -.418 | -.311 | -.163 | .053 | .463 | .080 | .021 | -.047 | -.035 | -.068 |
| 346. | -.716 | -.903 | -.560 | | -.409 | -.313 | -.160 | .052 | .456 | .078 | .013 | -.046 | -.034 | -.067 |
| 348. | -.701 | -.905 | -.555 | | -.397 | -.322 | -.157 | .054 | .447 | .079 | .010 | -.053 | -.035 | -.066 |
| 350. | -.687 | -.903 | -.550 | | -.394 | -.317 | -.161 | .061 | .414 | .077 | .015 | -.058 | -.037 | -.070 |
| 352. | -.671 | -.888 | -.549 | | -.394 | -.321 | -.170 | .065 | .406 | .075 | .014 | -.057 | -.037 | -.068 |
| 354. | -.637 | -.885 | -.543 | | -.386 | -.325 | -.167 | .072 | .396 | .073 | .014 | -.064 | -.036 | -.067 |
| 356. | -.605 | -.872 | -.530 | | -.388 | -.318 | -.163 | .071 | .366 | .053 | .005 | -.067 | -.035 | -.065 |
| 358. | -.570 | -.873 | -.521 | | -.385 | -.313 | -.160 | .071 | .359 | .051 | .002 | -.066 | -.043 | -.065 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 9 TIME 54467.200 MU= .330 CLP= .00436 TEMP(U60)= 10.6 C = 50.99 F

| X/C= | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 0. | -.750 | -.992 | -.588 | | -.394 | -.303 | -.150 | .058 | .484 | .114 | .045 | -.037 | -.023 | -.055 |
| 2. | -.681 | -.984 | -.573 | | -.389 | -.308 | -.146 | .063 | .450 | .108 | .021 | -.048 | -.031 | -.053 |
| 4. | -.623 | -.977 | -.559 | | -.380 | -.306 | -.150 | .061 | .422 | .087 | .014 | -.059 | -.034 | -.052 |
| 6. | -.556 | -.963 | -.545 | | -.370 | -.299 | -.154 | .054 | .407 | .067 | .014 | -.060 | -.033 | -.051 |
| 8. | -.492 | -.954 | -.532 | | -.373 | -.305 | -.159 | .059 | .377 | .052 | .003 | -.068 | -.032 | -.050 |
| 10. | -.436 | -.956 | -.543 | | -.378 | -.302 | -.162 | .056 | .348 | .042 | -.009 | -.077 | -.048 | -.061 |
| 12. | -.388 | -.950 | -.533 | | -.371 | -.295 | -.158 | .057 | .314 | .013 | -.030 | -.086 | -.052 | -.065 |
| 14. | -.338 | -.943 | -.533 | | -.374 | -.302 | -.154 | .067 | .275 | -.003 | -.042 | -.094 | -.051 | -.058 |
| 16. | -.299 | -.937 | -.533 | | -.379 | -.312 | -.151 | .069 | .257 | -.014 | -.042 | -.093 | -.050 | -.057 |
| 18. | -.262 | -.931 | -.522 | | -.384 | -.321 | -.157 | .068 | .245 | -.013 | -.051 | -.101 | -.058 | -.063 |
| 20. | -.227 | -.925 | -.522 | | -.388 | -.316 | -.158 | .074 | .229 | -.019 | -.051 | -.099 | -.067 | -.066 |
| 22. | -.193 | -.920 | -.522 | | -.381 | -.324 | -.154 | .075 | .216 | -.027 | -.070 | -.115 | -.066 | -.072 |
| 24. | -.161 | -.906 | -.513 | | -.385 | -.318 | -.151 | .073 | .203 | -.033 | -.078 | -.114 | -.074 | -.074 |
| 26. | -.130 | -.897 | -.514 | | -.388 | -.326 | -.158 | .079 | .191 | -.047 | -.078 | -.129 | -.082 | -.081 |
| 28. | -.100 | -.884 | -.518 | | -.382 | -.320 | -.157 | .080 | .179 | -.060 | -.095 | -.126 | -.081 | -.082 |
| 30. | -.071 | -.867 | -.547 | | -.386 | -.329 | -.154 | .086 | .167 | -.065 | -.102 | -.125 | -.080 | -.080 |
| 32. | -.035 | -.851 | -.602 | | -.390 | -.336 | -.152 | .086 | .148 | -.071 | -.100 | -.130 | -.086 | -.079 |
| 34. | -.005 | -.827 | -.661 | | -.394 | -.331 | -.159 | .092 | .130 | -.075 | -.102 | -.128 | -.086 | -.078 |
| 36. | .021 | -.810 | -.711 | | -.398 | -.339 | -.157 | .100 | .122 | -.082 | -.116 | -.131 | -.092 | -.076 |
| 38. | .045 | -.787 | -.752 | | -.400 | -.345 | -.155 | .098 | .100 | -.093 | -.124 | -.150 | -.090 | -.075 |
| 40. | .069 | -.772 | -.780 | | -.398 | -.342 | -.152 | .105 | .079 | -.104 | -.128 | -.153 | -.092 | -.074 |
| 42. | .092 | -.750 | -.803 | | -.407 | -.350 | -.150 | .103 | .063 | -.106 | -.131 | -.156 | -.104 | -.073 |
| 44. | .115 | -.738 | -.819 | | -.404 | -.354 | -.148 | .102 | .048 | -.114 | -.146 | -.169 | -.104 | -.071 |
| 46. | .137 | -.717 | -.832 | | -.408 | -.356 | -.146 | .108 | .033 | -.124 | -.158 | -.177 | -.109 | -.070 |
| 48. | .158 | -.696 | -.835 | | -.413 | -.368 | -.144 | .107 | .019 | -.134 | -.164 | -.174 | -.109 | -.070 |
| 50. | .169 | -.687 | -.833 | | -.413 | -.368 | -.142 | .107 | -.007 | -.144 | -.171 | -.178 | -.113 | -.069 |
| 52. | .188 | -.667 | -.827 | | -.416 | -.375 | -.140 | .112 | -.011 | -.154 | -.180 | -.188 | -.115 | -.068 |
| 54. | .208 | -.649 | -.817 | | -.426 | -.378 | -.138 | .112 | -.022 | -.163 | -.190 | -.196 | -.118 | -.067 |
| 56. | .217 | -.641 | -.808 | | -.430 | -.379 | -.135 | .119 | -.035 | -.163 | -.196 | -.205 | -.117 | -.066 |
| 58. | .226 | -.625 | -.800 | | -.435 | -.381 | -.126 | .125 | -.048 | -.171 | -.202 | -.210 | -.119 | -.066 |

FLT 63 RUN9

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 9 TIME 54467.200 MU= .330 CLP= .00436 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 60. | .245 | -.617 | -.792 | | -.445 | -.378 | -.122 | .129 | -.061 | -.170 | -.204 | -.215 | -.122 | -.063 |
| 62. | .254 | -.601 | -.779 | | -.459 | -.374 | -.114 | .130 | -.073 | -.179 | -.210 | -.212 | -.117 | -.056 |
| 64. | .262 | -.586 | -.763 | | -.478 | -.365 | -.110 | .134 | -.085 | -.188 | -.219 | -.212 | -.112 | -.056 |
| 66. | .270 | -.573 | -.755 | | -.501 | -.351 | -.103 | .136 | -.097 | -.197 | -.220 | -.213 | -.111 | -.055 |
| 68. | .281 | -.566 | -.737 | | -.523 | -.337 | -.098 | .139 | -.112 | -.207 | -.224 | -.211 | -.115 | -.055 |
| 70. | .301 | -.553 | -.716 | | -.546 | -.310 | -.088 | .141 | -.147 | -.217 | -.234 | -.209 | -.117 | -.054 |
| 72. | .328 | -.539 | -.701 | | -.575 | -.289 | -.083 | .141 | -.173 | -.237 | -.248 | -.218 | -.120 | -.051 |
| 74. | .347 | -.526 | -.682 | | -.588 | -.276 | -.082 | .136 | -.209 | -.256 | -.256 | -.230 | -.127 | -.046 |
| 76. | .366 | -.510 | -.656 | | -.601 | -.257 | -.082 | .136 | -.245 | -.276 | -.279 | -.243 | -.128 | -.042 |
| 78. | .385 | -.493 | -.636 | | -.602 | -.241 | -.081 | .135 | -.281 | -.298 | -.301 | -.255 | -.128 | -.034 |
| 80. | .403 | -.481 | -.617 | | -.600 | -.230 | -.081 | .135 | -.316 | -.327 | -.328 | -.262 | -.132 | -.026 |
| 82. | .419 | -.470 | -.600 | | -.612 | -.226 | -.081 | .134 | -.352 | -.354 | -.350 | -.274 | -.123 | -.018 |
| 84. | .428 | -.459 | -.582 | | -.614 | -.217 | -.081 | .134 | -.387 | -.374 | -.377 | -.286 | -.120 | -.014 |
| 86. | .437 | -.444 | -.573 | | -.613 | -.215 | -.080 | .129 | -.419 | -.394 | -.399 | -.293 | -.114 | -.014 |
| 88. | .451 | -.429 | -.556 | | -.612 | -.215 | -.086 | .127 | -.443 | -.421 | -.427 | -.300 | -.113 | -.009 |
| 90. | .462 | -.425 | -.540 | | -.612 | -.215 | -.089 | .132 | -.472 | -.462 | -.449 | -.306 | -.107 | -.006 |
| 92. | .472 | -.419 | -.533 | | -.596 | -.224 | -.089 | .134 | -.519 | -.503 | -.464 | -.306 | -.100 | -.006 |
| 94. | .482 | -.410 | -.525 | | -.596 | -.225 | -.089 | .128 | -.574 | -.545 | -.478 | -.300 | -.100 | -.006 |
| 96. | .488 | -.401 | -.518 | | -.597 | -.236 | -.097 | .127 | -.624 | -.582 | -.486 | -.286 | -.093 | -.006 |
| 98. | .494 | -.386 | -.511 | | -.598 | -.247 | -.099 | .128 | -.667 | -.609 | -.494 | -.260 | -.087 | -.000 |
| 100. | .501 | -.374 | -.506 | | -.599 | -.259 | -.106 | .128 | -.706 | -.626 | -.496 | -.238 | -.073 | .002 |
| 102. | .507 | -.359 | -.506 | | -.594 | -.272 | -.108 | .128 | -.738 | -.650 | -.502 | -.203 | -.074 | .002 |
| 104. | .509 | -.348 | -.500 | | -.595 | -.294 | -.117 | .122 | -.773 | -.678 | -.533 | -.189 | -.074 | .002 |
| 106. | .512 | -.340 | -.494 | | -.588 | -.307 | -.118 | .123 | -.806 | -.696 | -.564 | -.171 | -.073 | .002 |
| 108. | .514 | -.332 | -.489 | | -.570 | -.331 | -.119 | .123 | -.827 | -.717 | -.588 | -.160 | -.068 | .002 |
| 110. | .518 | -.333 | -.484 | | -.538 | -.354 | -.120 | .117 | -.854 | -.742 | -.606 | -.154 | -.067 | .002 |
| 112. | .521 | -.335 | -.476 | | -.507 | -.370 | -.120 | .118 | -.876 | -.761 | -.625 | -.150 | -.059 | .002 |
| 114. | .525 | -.328 | -.466 | | -.477 | -.392 | -.121 | .119 | -.904 | -.778 | -.645 | -.145 | -.048 | .002 |
| 116. | .521 | -.330 | -.454 | | -.451 | -.410 | -.113 | .120 | -.927 | -.795 | -.666 | -.132 | -.049 | -.006 |
| 118. | .524 | -.333 | -.425 | | -.419 | -.430 | -.114 | .121 | -.959 | -.813 | -.681 | -.131 | -.049 | .002 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 9 TIME 54467.200 MU= .330 CLP= .00436 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 120. | .519 | -.336 | -.386 | | -.389 | -.430 | -.115 | .121 | -.972 | -.831 | -.694 | -.128 | -.049 | .001 |
| 122. | .513 | -.340 | -.350 | | -.373 | -.419 | -.116 | .116 | -.993 | -.842 | -.713 | -.129 | -.050 | -.007 |
| 124. | .508 | -.343 | -.323 | | -.368 | -.400 | -.117 | .115 | -1.017 | -.860 | -.725 | -.134 | -.050 | -.007 |
| 126. | .513 | -.347 | -.310 | | -.371 | -.385 | -.119 | .111 | -1.030 | -.871 | -.737 | -.139 | -.051 | -.007 |
| 128. | .508 | -.351 | -.305 | | -.380 | -.377 | -.120 | .110 | -1.068 | -.882 | -.750 | -.141 | -.052 | -.007 |
| 130. | .503 | -.356 | -.311 | | -.390 | -.370 | -.122 | .105 | -1.082 | -.893 | -.760 | -.142 | -.052 | -.007 |
| 132. | .498 | -.360 | -.312 | | -.394 | -.362 | -.123 | .104 | -1.110 | -.905 | -.737 | -.144 | -.053 | -.007 |
| 134. | .493 | -.363 | -.307 | | -.395 | -.355 | -.125 | .100 | -1.139 | -.917 | -.614 | -.146 | -.054 | -.007 |
| 136. | .488 | -.360 | -.309 | | -.401 | -.347 | -.127 | .102 | -1.157 | -.930 | -.428 | -.148 | -.050 | -.010 |
| 138. | .484 | -.362 | -.313 | | -.395 | -.339 | -.129 | .100 | -1.187 | -.942 | -.285 | -.151 | -.047 | -.017 |
| 140. | .481 | -.356 | -.326 | | -.387 | -.331 | -.131 | .093 | -1.206 | -.912 | -.237 | -.153 | -.048 | -.017 |
| 142. | .484 | -.353 | -.325 | | -.382 | -.332 | -.133 | .090 | -1.225 | -.727 | -.248 | -.156 | -.049 | -.013 |
| 144. | .469 | -.359 | -.329 | | -.378 | -.329 | -.135 | .087 | -1.243 | -.574 | -.270 | -.158 | -.050 | -.008 |
| 146. | .461 | -.366 | -.335 | | -.366 | -.320 | -.137 | .084 | -1.228 | -.505 | -.293 | -.161 | -.050 | -.008 |
| 148. | .443 | -.372 | -.341 | | -.367 | -.322 | -.140 | .081 | -1.135 | -.487 | -.295 | -.150 | -.045 | -.008 |
| 150. | .424 | -.379 | -.347 | | -.365 | -.328 | -.142 | .078 | -1.032 | -.469 | -.291 | -.135 | -.043 | -.008 |
| 152. | .405 | -.393 | -.354 | | -.360 | -.323 | -.145 | .080 | -.936 | -.450 | -.279 | -.135 | -.037 | -.008 |
| 154. | .380 | -.407 | -.350 | | -.365 | -.326 | -.148 | .075 | -.837 | -.426 | -.264 | -.138 | -.036 | -.014 |
| 156. | .351 | -.415 | -.368 | | -.373 | -.320 | -.151 | .073 | -.747 | -.396 | -.240 | -.132 | -.029 | -.020 |
| 158. | .329 | -.432 | -.376 | | -.380 | -.325 | -.145 | .075 | -.675 | -.375 | -.223 | -.125 | -.028 | -.020 |
| 160. | .300 | -.455 | -.395 | | -.377 | -.318 | -.144 | .076 | -.600 | -.347 | -.207 | -.108 | -.028 | -.020 |
| 162. | .268 | -.479 | -.404 | | -.384 | -.323 | -.148 | .070 | -.522 | -.315 | -.189 | -.101 | -.019 | -.021 |
| 164. | .235 | -.505 | -.414 | | -.380 | -.330 | -.151 | .069 | -.450 | -.290 | -.172 | -.102 | -.019 | -.030 |
| 166. | .193 | -.522 | -.434 | | -.389 | -.338 | -.154 | .062 | -.384 | -.264 | -.163 | -.085 | -.020 | -.025 |
| 168. | .149 | -.545 | -.445 | | -.397 | -.329 | -.158 | .061 | -.315 | -.238 | -.144 | -.087 | -.009 | -.022 |
| 170. | .102 | -.573 | -.458 | | -.395 | -.336 | -.162 | .063 | -.242 | -.210 | -.123 | -.086 | .002 | -.033 |
| 172. | .054 | -.604 | -.479 | | -.415 | -.326 | -.152 | .064 | -.178 | -.180 | -.102 | -.067 | .003 | -.026 |
| 174. | .003 | -.635 | -.491 | | -.413 | -.317 | -.154 | .066 | -.107 | -.149 | -.082 | -.058 | .013 | -.024 |
| 176. | -.050 | -.668 | -.507 | | -.421 | -.325 | -.158 | .068 | -.037 | -.116 | -.068 | -.047 | .014 | -.025 |
| 178. | -.120 | -.703 | -.530 | | -.419 | -.333 | -.162 | .069 | .043 | -.082 | -.047 | -.036 | .014 | -.025 |

FLT 63 RUN9

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 9 TIME 54467.200 MU= .330 CLP= .00436 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 180. | -.198 | -.739 | -.544 | | -.430 | -.338 | -.150 | .071 | .118 | -.059 | -.031 | -.025 | .017 | -.026 |
| 182. | -.265 | -.776 | -.558 | | -.437 | -.331 | -.154 | .060 | .174 | -.027 | -.008 | -.013 | .028 | -.026 |
| 184. | -.348 | -.816 | -.579 | | -.436 | -.334 | -.158 | .061 | .226 | -.002 | .011 | -.004 | .032 | -.027 |
| 186. | -.421 | -.857 | -.604 | | -.443 | -.327 | -.162 | .063 | .281 | .034 | .035 | -.005 | .043 | -.028 |
| 188. | -.513 | -.900 | -.620 | | -.443 | -.336 | -.164 | .065 | .339 | .060 | .051 | .001 | .044 | -.029 |
| 190. | -.593 | -.925 | -.637 | | -.455 | -.337 | -.152 | .066 | .399 | .084 | .061 | .015 | .045 | -.028 |
| 192. | -.696 | -.971 | -.654 | | -.467 | -.332 | -.156 | .068 | .440 | .109 | .077 | .023 | .046 | -.013 |
| 194. | -.784 | -1.018 | -.672 | | -.472 | -.341 | -.161 | .070 | .479 | .134 | .104 | .031 | .053 | -.014 |
| 196. | -.898 | -1.046 | -.691 | | -.474 | -.350 | -.165 | .068 | .520 | .162 | .124 | .047 | .064 | -.014 |
| 198. | -1.017 | -1.078 | -.710 | | -.488 | -.348 | -.170 | .058 | .564 | .191 | .144 | .056 | .066 | -.014 |
| 200. | -1.119 | -1.128 | -.730 | | -.501 | -.357 | -.174 | .060 | .609 | .197 | .156 | .058 | .068 | -.015 |
| 202. | -1.226 | -1.159 | -.750 | | -.503 | -.366 | -.172 | .061 | .656 | .227 | .171 | .069 | .078 | -.015 |
| 204. | -1.338 | -1.191 | -.771 | | -.508 | -.349 | -.170 | .063 | .703 | .235 | .194 | .077 | .089 | -.016 |
| 206. | -1.455 | -1.224 | -.777 | | -.508 | -.346 | -.180 | .065 | .723 | .266 | .207 | .080 | .091 | -.016 |
| 208. | -1.577 | -1.258 | -.793 | | -.514 | -.356 | -.160 | .066 | .747 | .277 | .213 | .094 | .094 | -.017 |
| 210. | -1.705 | -1.293 | -.815 | | -.512 | -.347 | -.151 | .068 | .796 | .309 | .232 | .102 | .096 | -.017 |
| 212. | -1.831 | -1.328 | -.837 | | -.519 | -.345 | -.155 | .070 | .818 | .317 | .245 | .105 | .099 | -.017 |
| 214. | -1.932 | -1.364 | -.840 | | -.515 | -.333 | -.159 | .072 | .840 | .332 | .251 | .108 | .102 | -.018 |
| 216. | -2.005 | -1.389 | -.859 | | -.522 | -.332 | -.149 | .074 | .853 | .365 | .275 | .111 | .104 | -.018 |
| 218. | -2.048 | -1.409 | -.860 | | -.536 | -.341 | -.140 | .076 | .849 | .375 | .287 | .114 | .092 | -.019 |
| 220. | -2.081 | -1.446 | -.880 | | -.550 | -.350 | -.144 | .078 | .871 | .384 | .294 | .117 | .089 | -.019 |
| 222. | -2.135 | -1.467 | -.878 | | -.541 | -.359 | -.147 | .080 | .893 | .394 | .302 | .120 | .091 | -.020 |
| 224. | -2.188 | -1.472 | -.903 | | -.551 | -.368 | -.151 | .082 | .901 | .404 | .309 | .123 | .093 | -.020 |
| 226. | -2.242 | -1.493 | -.895 | | -.542 | -.376 | -.154 | .079 | .898 | .413 | .312 | .126 | .078 | -.019 |
| 228. | -2.280 | -1.509 | -.916 | | -.549 | -.353 | -.158 | .067 | .920 | .410 | .324 | .129 | .075 | -.020 |
| 230. | -2.297 | -1.531 | -.935 | | -.532 | -.358 | -.162 | .082 | .922 | .398 | .307 | .131 | .076 | -.022 |
| 232. | -2.312 | -1.543 | -.927 | | -.544 | -.366 | -.166 | .090 | .919 | .407 | .314 | .111 | .078 | -.022 |
| 234. | -2.325 | -1.541 | -.922 | | -.554 | -.374 | -.170 | .092 | .916 | .416 | .319 | .113 | .079 | -.023 |
| 236. | -2.335 | -1.536 | -.936 | | -.536 | -.342 | -.145 | .094 | .914 | .425 | .300 | .116 | .081 | -.023 |
| 238. | -2.368 | -1.557 | -.930 | | -.547 | -.348 | -.142 | .096 | .933 | .434 | .307 | .118 | .083 | -.024 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 9 TIME 54467.200 MU= .330 CLP= .00436 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 240. | -2.414 | -1.558 | -.940 | | -.557 | -.355 | -.145 | .073 | .922 | .419 | .312 | .120 | .084 | -.024 |
| 242. | -2.430 | -1.547 | -.933 | | -.562 | -.362 | -.147 | .072 | .920 | .410 | .318 | .122 | .083 | -.025 |
| 244. | -2.460 | -1.567 | -.940 | | -.543 | -.368 | -.150 | .073 | .936 | .417 | .317 | .125 | .060 | -.025 |
| 246. | -2.500 | -1.558 | -.932 | | -.552 | -.374 | -.152 | .074 | .917 | .424 | .299 | .127 | .061 | -.026 |
| 248. | -2.538 | -1.541 | -.934 | | -.560 | -.380 | -.155 | .076 | .916 | .430 | .304 | .129 | .062 | -.026 |
| 250. | -2.539 | -1.558 | -.926 | | -.558 | -.385 | -.157 | .104 | .929 | .404 | .308 | .121 | .062 | -.026 |
| 252. | -2.564 | -1.539 | -.923 | | -.539 | -.390 | -.159 | .077 | .941 | .398 | .312 | .104 | .063 | -.027 |
| 254. | -2.594 | -1.555 | -.914 | | -.545 | -.395 | -.161 | .078 | .952 | .403 | .316 | .105 | .064 | -.027 |
| 256. | -2.581 | -1.528 | -.923 | | -.551 | -.399 | -.162 | .074 | .916 | .407 | .306 | .106 | .065 | -.027 |
| 258. | -2.559 | -1.500 | -.932 | | -.556 | -.385 | -.164 | .049 | .917 | .411 | .290 | .107 | .065 | -.027 |
| 260. | -2.575 | -1.508 | -.900 | | -.560 | -.357 | -.165 | .056 | .924 | .414 | .292 | .108 | .066 | -.028 |
| 262. | -2.502 | -1.478 | -.873 | | -.546 | -.360 | -.166 | .081 | .930 | .416 | .294 | .108 | .066 | -.028 |
| 264. | -2.514 | -1.485 | -.878 | | -.528 | -.361 | -.167 | .073 | .934 | .418 | .296 | .093 | .066 | -.028 |
| 266. | -2.523 | -1.490 | -.881 | | -.530 | -.363 | -.168 | .050 | .938 | .420 | .297 | .079 | .067 | -.028 |
| 268. | -2.525 | -1.485 | -.883 | | -.531 | -.364 | -.168 | .050 | .940 | .375 | .297 | .080 | .067 | -.028 |
| 270. | -2.485 | -1.451 | -.883 | | -.531 | -.364 | -.168 | .050 | .940 | .375 | .298 | .080 | .050 | -.028 |
| 272. | -2.477 | -1.450 | -.883 | | -.531 | -.364 | -.168 | .050 | .940 | .375 | .276 | .080 | .036 | -.028 |
| 274. | -2.433 | -1.447 | -.881 | | -.530 | -.363 | -.168 | .050 | .938 | .374 | .264 | .079 | .036 | -.028 |
| 276. | -2.424 | -1.428 | -.878 | | -.528 | -.362 | -.167 | .050 | .934 | .373 | .263 | .079 | .035 | -.028 |
| 278. | -2.402 | -1.392 | -.844 | | -.526 | -.360 | -.166 | .049 | .930 | .371 | .262 | .079 | .035 | -.028 |
| 280. | -2.353 | -1.384 | -.833 | | -.550 | -.358 | -.165 | .049 | .924 | .368 | .260 | .055 | .035 | -.028 |
| 282. | -2.335 | -1.373 | -.826 | | -.527 | -.355 | -.164 | .049 | .917 | .366 | .258 | .048 | .035 | -.027 |
| 284. | -2.300 | -1.361 | -.819 | | -.514 | -.352 | -.162 | .066 | .909 | .362 | .256 | .048 | .035 | -.027 |
| 286. | -2.248 | -1.347 | -.811 | | -.539 | -.348 | -.161 | .060 | .900 | .359 | .253 | .047 | .034 | -.027 |
| 288. | -2.222 | -1.332 | -.801 | | -.508 | -.344 | -.159 | .047 | .890 | .355 | .251 | .047 | .034 | -.027 |
| 290. | -2.194 | -1.315 | -.797 | | -.528 | -.340 | -.157 | .047 | .878 | .350 | .247 | .046 | .033 | -.026 |
| 292. | -2.145 | -1.320 | -.819 | | -.530 | -.372 | -.154 | .040 | .866 | .344 | .238 | .046 | .036 | -.024 |
| 294. | -2.090 | -1.317 | -.807 | | -.522 | -.372 | -.151 | .037 | .853 | .339 | .234 | .045 | .036 | -.043 |
| 296. | -2.057 | -1.296 | -.794 | | -.514 | -.366 | -.149 | .037 | .861 | .333 | .230 | .045 | .009 | -.053 |
| 298. | -2.022 | -1.274 | -.775 | | -.505 | -.360 | -.146 | .036 | .873 | .328 | .226 | .069 | .033 | -.053 |

FLT 63 RUN9

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 9 TIME 54467.200 MU= .330 CLP= .00436 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 300. | -1.986 | -1.251 | -.762 | | -.491 | -.356 | -.173 | .042 | .858 | .323 | .228 | .043 | .031 | -.054 |
| 302. | -1.948 | -1.254 | -.752 | | -.484 | -.349 | -.177 | .042 | .841 | .316 | .223 | .042 | .030 | -.031 |
| 304. | -1.909 | -1.239 | -.737 | | -.509 | -.340 | -.172 | .058 | .824 | .309 | .213 | .042 | .032 | -.021 |
| 306. | -1.869 | -1.214 | -.722 | | -.498 | -.336 | -.168 | .036 | .834 | .303 | .209 | .045 | .032 | -.019 |
| 308. | -1.829 | -1.215 | -.722 | | -.488 | -.364 | -.165 | .033 | .833 | .297 | .205 | .064 | .031 | -.019 |
| 310. | -1.789 | -1.195 | -.747 | | -.482 | -.356 | -.161 | .056 | .815 | .290 | .200 | .057 | .030 | -.019 |
| 312. | -1.748 | -1.196 | -.728 | | -.495 | -.348 | -.188 | .031 | .796 | .283 | .195 | .038 | .030 | -.018 |
| 314. | -1.707 | -1.172 | -.718 | | -.482 | -.340 | -.154 | .031 | .778 | .277 | .192 | .030 | .029 | -.018 |
| 316. | -1.666 | -1.173 | -.717 | | -.468 | -.334 | -.152 | .059 | .759 | .271 | .192 | .007 | .026 | -.020 |
| 318. | -1.625 | -1.147 | -.710 | | -.456 | -.325 | -.176 | .058 | .771 | .264 | .187 | -.007 | .025 | -.020 |
| 320. | -1.584 | -1.118 | -.707 | | -.445 | -.327 | -.172 | .056 | .759 | .258 | .182 | -.007 | .025 | -.044 |
| 322. | -1.544 | -1.119 | -.689 | | -.443 | -.342 | -.168 | .055 | .740 | .251 | .178 | -.007 | .024 | -.043 |
| 324. | -1.504 | -1.118 | -.685 | | -.448 | -.333 | -.163 | .053 | .721 | .245 | .173 | -.007 | .023 | -.042 |
| 326. | -1.465 | -1.091 | -.681 | | -.448 | -.324 | -.159 | .051 | .733 | .237 | .157 | -.007 | .024 | -.040 |
| 328. | -1.426 | -1.090 | -.675 | | -.441 | -.327 | -.154 | .045 | .717 | .231 | .139 | -.006 | .024 | -.037 |
| 330. | -1.388 | -1.085 | -.665 | | -.428 | -.335 | -.156 | .044 | .698 | .225 | .136 | -.006 | .024 | -.036 |
| 332. | -1.351 | -1.060 | -.661 | | -.426 | -.327 | -.170 | .044 | .712 | .220 | .134 | -.006 | .013 | -.036 |
| 334. | -1.314 | -1.057 | -.664 | | -.427 | -.318 | -.166 | .051 | .692 | .213 | .130 | -.006 | .004 | -.036 |
| 336. | -1.279 | -1.053 | -.651 | | -.437 | -.309 | -.169 | .053 | .674 | .208 | .127 | -.006 | .003 | -.040 |
| 338. | -1.244 | -1.049 | -.634 | | -.433 | -.317 | -.179 | .051 | .658 | .203 | .125 | -.006 | .002 | -.054 |
| 340. | -1.211 | -1.044 | -.631 | | -.421 | -.319 | -.175 | .060 | .667 | .197 | .122 | -.006 | -.007 | -.053 |
| 342. | -1.178 | -1.039 | -.633 | | -.410 | -.311 | -.170 | .058 | .649 | .192 | .119 | -.005 | -.014 | -.051 |
| 344. | -1.146 | -1.033 | -.634 | | -.412 | -.318 | -.165 | .056 | .631 | .187 | .116 | -.017 | -.013 | -.050 |
| 346. | -1.115 | -1.035 | -.635 | | -.406 | -.318 | -.161 | .055 | .620 | .186 | .112 | -.020 | -.013 | -.056 |
| 348. | -1.092 | -1.041 | -.638 | | -.410 | -.326 | -.157 | .053 | .623 | .198 | .109 | -.019 | -.013 | -.064 |
| 350. | -1.077 | -1.034 | -.636 | | -.419 | -.322 | -.152 | .058 | .607 | .193 | .104 | -.018 | -.011 | -.061 |
| 352. | -1.042 | -1.036 | -.621 | | -.410 | -.314 | -.159 | .063 | .591 | .188 | .103 | -.018 | -.012 | -.060 |
| 354. | -.994 | -1.039 | -.620 | | -.413 | -.306 | -.162 | .063 | .575 | .183 | .101 | -.018 | -.012 | -.059 |
| 356. | -.940 | -1.031 | -.619 | | -.404 | -.316 | -.158 | .061 | .552 | .172 | .086 | -.017 | -.011 | -.058 |
| 358. | -.869 | -1.023 | -.604 | | -.394 | -.311 | -.154 | .069 | .523 | .148 | .070 | -.017 | -.011 | -.056 |

FLT 63 RUN9

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 10 TIME 54541.600 MU= .356 CLP= .00421 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 0. | -.875 | -.988 | -.593 | | -.391 | -.291 | -.142 | .051 | .523 | .152 | .071 | -.024 | -.019 | -.049 |
| 2. | -.815 | -.992 | -.577 | | -.379 | -.285 | -.152 | .052 | .497 | .129 | .058 | -.026 | -.020 | -.048 |
| 4. | -.746 | -.987 | -.561 | | -.371 | -.295 | -.150 | .051 | .475 | .118 | .044 | -.037 | -.020 | -.047 |
| 6. | -.674 | -.990 | -.545 | | -.373 | -.288 | -.146 | .061 | .450 | .105 | .029 | -.047 | -.030 | -.058 |
| 8. | -.595 | -.984 | -.540 | | -.365 | -.283 | -.143 | .063 | .418 | .085 | .010 | -.057 | -.032 | -.059 |
| 10. | -.526 | -.975 | -.543 | | -.368 | -.290 | -.139 | .058 | .387 | .066 | .009 | -.064 | -.040 | -.057 |
| 12. | -.477 | -.966 | -.534 | | -.360 | -.287 | -.150 | .060 | .372 | .059 | .007 | -.066 | -.040 | -.056 |
| 14. | -.422 | -.944 | -.533 | | -.361 | -.293 | -.146 | .069 | .349 | .047 | -.004 | -.074 | -.039 | -.055 |
| 16. | -.378 | -.949 | -.528 | | -.356 | -.294 | -.144 | .067 | .322 | .041 | -.015 | -.083 | -.040 | -.054 |
| 18. | -.339 | -.928 | -.521 | | -.360 | -.310 | -.153 | .064 | .297 | .029 | -.022 | -.087 | -.053 | -.076 |
| 20. | -.303 | -.920 | -.521 | | -.365 | -.303 | -.149 | .056 | .287 | .025 | -.029 | -.093 | -.068 | -.084 |
| 22. | -.255 | -.913 | -.521 | | -.369 | -.301 | -.148 | .064 | .280 | .012 | -.046 | -.109 | -.073 | -.071 |
| 24. | -.220 | -.906 | -.520 | | -.373 | -.309 | -.154 | .071 | .245 | -.014 | -.059 | -.117 | -.068 | -.060 |
| 26. | -.188 | -.888 | -.514 | | -.371 | -.318 | -.152 | .079 | .222 | -.029 | -.072 | -.115 | -.061 | -.071 |
| 28. | -.158 | -.881 | -.522 | | -.374 | -.320 | -.151 | .077 | .216 | -.030 | -.076 | -.112 | -.064 | -.078 |
| 30. | -.128 | -.863 | -.563 | | -.384 | -.319 | -.157 | .077 | .197 | -.030 | -.075 | -.114 | -.071 | -.078 |
| 32. | -.100 | -.846 | -.619 | | -.388 | -.320 | -.153 | .083 | .193 | -.042 | -.080 | -.116 | -.078 | -.084 |
| 34. | -.072 | -.828 | -.678 | | -.391 | -.321 | -.151 | .087 | .189 | -.041 | -.082 | -.124 | -.081 | -.082 |
| 36. | -.033 | -.804 | -.720 | | -.388 | -.328 | -.148 | .089 | .184 | -.041 | -.086 | -.127 | -.084 | -.078 |
| 38. | .002 | -.786 | -.763 | | -.387 | -.328 | -.145 | .093 | .167 | -.052 | -.092 | -.125 | -.091 | -.070 |
| 40. | .025 | -.765 | -.794 | | -.391 | -.330 | -.143 | .096 | .149 | -.062 | -.094 | -.134 | -.093 | -.072 |
| 42. | .049 | -.749 | -.811 | | -.395 | -.337 | -.140 | .097 | .133 | -.063 | -.093 | -.147 | -.091 | -.076 |
| 44. | .071 | -.730 | -.826 | | -.392 | -.336 | -.138 | .100 | .117 | -.074 | -.115 | -.160 | -.100 | -.075 |
| 46. | .093 | -.714 | -.833 | | -.393 | -.339 | -.136 | .102 | .101 | -.084 | -.128 | -.161 | -.103 | -.074 |
| 48. | .114 | -.693 | -.839 | | -.404 | -.346 | -.134 | .105 | .086 | -.094 | -.140 | -.171 | -.107 | -.073 |
| 50. | .134 | -.673 | -.829 | | -.409 | -.353 | -.132 | .111 | .072 | -.104 | -.148 | -.171 | -.113 | -.072 |
| 52. | .154 | -.659 | -.826 | | -.413 | -.360 | -.130 | .113 | .058 | -.114 | -.147 | -.181 | -.113 | -.071 |
| 54. | .174 | -.645 | -.816 | | -.425 | -.358 | -.129 | .111 | .044 | -.120 | -.159 | -.187 | -.118 | -.070 |
| 56. | .193 | -.627 | -.816 | | -.438 | -.363 | -.127 | .115 | .031 | -.122 | -.165 | -.198 | -.124 | -.065 |
| 58. | .207 | -.610 | -.798 | | -.444 | -.370 | -.119 | .119 | .018 | -.132 | -.172 | -.209 | -.123 | -.060 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 10 TIME 54541.600 MU= .356 CLP= .00421 TEMP(U60)= 10.6 C = 50.99 F

| X/C= | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 60. | .220 | -.594 | -.789 | | -.456 | -.368 | -.115 | .125 | .005 | -.141 | -.178 | -.214 | -.128 | -.059 |
| 62. | .233 | -.578 | -.774 | | -.478 | -.364 | -.107 | .125 | -.007 | -.146 | -.191 | -.212 | -.127 | -.058 |
| 64. | .247 | -.563 | -.765 | | -.508 | -.350 | -.097 | .130 | -.020 | -.149 | -.196 | -.211 | -.126 | -.052 |
| 66. | .260 | -.555 | -.749 | | -.528 | -.337 | -.087 | .137 | -.038 | -.158 | -.194 | -.223 | -.126 | -.050 |
| 68. | .273 | -.544 | -.729 | | -.557 | -.303 | -.078 | .144 | -.062 | -.172 | -.207 | -.233 | -.125 | -.050 |
| 70. | .297 | -.530 | -.712 | | -.577 | -.289 | -.068 | .150 | -.092 | -.191 | -.221 | -.233 | -.124 | -.050 |
| 72. | .325 | -.517 | -.686 | | -.582 | -.266 | -.059 | .149 | -.127 | -.210 | -.240 | -.246 | -.129 | -.043 |
| 74. | .346 | -.505 | -.664 | | -.589 | -.244 | -.049 | .149 | -.162 | -.229 | -.254 | -.260 | -.123 | -.035 |
| 76. | .371 | -.485 | -.638 | | -.608 | -.224 | -.048 | .148 | -.204 | -.254 | -.274 | -.260 | -.135 | -.034 |
| 78. | .392 | -.472 | -.618 | | -.611 | -.224 | -.040 | .149 | -.242 | -.282 | -.294 | -.269 | -.135 | -.034 |
| 80. | .410 | -.453 | -.595 | | -.608 | -.226 | -.040 | .148 | -.277 | -.311 | -.321 | -.285 | -.134 | -.034 |
| 82. | .428 | -.441 | -.575 | | -.606 | -.247 | -.039 | .148 | -.311 | -.332 | -.346 | -.295 | -.134 | -.027 |
| 84. | .446 | -.422 | -.555 | | -.606 | -.266 | -.031 | .147 | -.353 | -.359 | -.369 | -.305 | -.133 | -.019 |
| 86. | .464 | -.412 | -.535 | | -.607 | -.291 | -.030 | .144 | -.381 | -.388 | -.397 | -.326 | -.130 | -.010 |
| 88. | .475 | -.402 | -.519 | | -.603 | -.329 | -.030 | .143 | -.413 | -.424 | -.419 | -.351 | -.125 | -.003 |
| 90. | .484 | -.384 | -.507 | | -.598 | -.357 | -.030 | .143 | -.458 | -.471 | -.433 | -.373 | -.119 | -.002 |
| 92. | .503 | -.375 | -.496 | | -.595 | -.381 | -.030 | .143 | -.514 | -.512 | -.447 | -.393 | -.104 | .005 |
| 94. | .513 | -.366 | -.488 | | -.584 | -.405 | -.030 | .144 | -.573 | -.543 | -.458 | -.409 | -.097 | .006 |
| 96. | .515 | -.357 | -.476 | | -.575 | -.412 | -.031 | .144 | -.622 | -.574 | -.462 | -.426 | -.086 | .012 |
| 98. | .535 | -.347 | -.467 | | -.576 | -.404 | -.033 | .146 | -.659 | -.596 | -.474 | -.443 | -.072 | .011 |
| 100. | .537 | -.331 | -.460 | | -.573 | -.380 | -.039 | .144 | -.696 | -.627 | -.504 | -.461 | -.066 | .013 |
| 102. | .548 | -.322 | -.455 | | -.567 | -.345 | -.042 | .140 | -.722 | -.649 | -.533 | -.478 | -.059 | .019 |
| 104. | .550 | -.304 | -.450 | | -.562 | -.309 | -.051 | .140 | -.760 | -.672 | -.557 | -.493 | -.049 | .019 |
| 106. | .553 | -.289 | -.443 | | -.562 | -.279 | -.060 | .137 | -.787 | -.686 | -.577 | -.509 | -.039 | .020 |
| 108. | .557 | -.284 | -.437 | | -.559 | -.262 | -.070 | .136 | -.815 | -.710 | -.594 | -.530 | -.033 | .020 |
| 110. | .560 | -.283 | -.427 | | -.553 | -.260 | -.080 | .139 | -.834 | -.734 | -.612 | -.539 | -.027 | .019 |
| 112. | .564 | -.275 | -.419 | | -.545 | -.261 | -.085 | .135 | -.864 | -.751 | -.631 | -.528 | -.024 | .019 |
| 114. | .567 | -.271 | -.414 | | -.531 | -.278 | -.090 | .132 | -.893 | -.774 | -.645 | -.487 | -.020 | .020 |
| 116. | .564 | -.274 | -.404 | | -.517 | -.295 | -.096 | .135 | -.913 | -.785 | -.663 | -.406 | -.014 | .019 |
| 118. | .566 | -.276 | -.383 | | -.512 | -.308 | -.096 | .135 | -.934 | -.808 | -.685 | -.325 | -.011 | .020 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 10 TIME 54541.600 MU= .356 CLP= .00421 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 120. | .561 | -.279 | -.354 | | -.501 | -.323 | -.097 | .133 | -.956 | -.816 | -.700 | -.240 | -.012 | .016 |
| 122. | .557 | -.282 | -.326 | | -.488 | -.338 | -.098 | .132 | -.975 | -.831 | -.715 | -.170 | -.012 | .007 |
| 124. | .552 | -.291 | -.304 | | -.492 | -.343 | -.099 | .127 | -.994 | -.855 | -.731 | -.114 | -.017 | .009 |
| 126. | .548 | -.299 | -.282 | | -.490 | -.347 | -.107 | .121 | -1.027 | -.869 | -.748 | -.098 | -.019 | .013 |
| 128. | .544 | -.303 | -.277 | | -.487 | -.352 | -.111 | .120 | -1.054 | -.891 | -.765 | -.078 | -.013 | .013 |
| 130. | .540 | -.313 | -.281 | | -.484 | -.356 | -.113 | .116 | -1.075 | -.910 | -.783 | -.064 | -.005 | .007 |
| 132. | .537 | -.321 | -.293 | | -.454 | -.361 | -.114 | .116 | -1.097 | -.923 | -.795 | -.058 | -.005 | .005 |
| 134. | .527 | -.326 | -.306 | | -.440 | -.367 | -.116 | .119 | -1.127 | -.936 | -.806 | -.059 | -.013 | .004 |
| 136. | .526 | -.331 | -.320 | | -.418 | -.349 | -.110 | .115 | -1.151 | -.951 | -.818 | -.061 | -.021 | .004 |
| 138. | .520 | -.328 | -.333 | | -.415 | -.342 | -.119 | .109 | -1.169 | -.966 | -.830 | -.070 | -.021 | -.003 |
| 140. | .512 | -.331 | -.336 | | -.413 | -.335 | -.122 | .109 | -1.197 | -.982 | -.834 | -.087 | -.022 | -.013 |
| 142. | .509 | -.337 | -.333 | | -.417 | -.341 | -.124 | .104 | -1.224 | -.999 | -.804 | -.103 | -.030 | -.015 |
| 144. | .497 | -.343 | -.331 | | -.404 | -.344 | -.126 | .097 | -1.246 | -1.017 | -.621 | -.113 | -.032 | -.015 |
| 146. | .490 | -.349 | -.338 | | -.390 | -.328 | -.129 | .098 | -1.279 | -1.020 | -.404 | -.124 | -.040 | -.015 |
| 148. | .496 | -.345 | -.344 | | -.378 | -.331 | -.131 | .100 | -1.308 | -.918 | -.266 | -.133 | -.040 | -.016 |
| 150. | .476 | -.362 | -.351 | | -.372 | -.327 | -.134 | .093 | -1.323 | -.717 | -.233 | -.135 | -.041 | -.016 |
| 152. | .467 | -.370 | -.354 | | -.363 | -.330 | -.137 | .085 | -1.298 | -.575 | -.253 | -.138 | -.040 | -.016 |
| 154. | .441 | -.390 | -.351 | | -.367 | -.326 | -.140 | .079 | -1.209 | -.514 | -.278 | -.141 | -.034 | -.017 |
| 156. | .420 | -.399 | -.354 | | -.368 | -.329 | -.143 | .080 | -1.060 | -.469 | -.277 | -.140 | -.032 | -.017 |
| 158. | .389 | -.421 | -.362 | | -.377 | -.325 | -.145 | .078 | -.938 | -.445 | -.264 | -.130 | -.025 | -.016 |
| 160. | .367 | -.418 | -.370 | | -.386 | -.333 | -.149 | .071 | -.834 | -.413 | -.245 | -.118 | -.022 | -.016 |
| 162. | .346 | -.442 | -.391 | | -.395 | -.335 | -.152 | .073 | -.728 | -.377 | -.223 | -.111 | -.016 | -.017 |
| 164. | .309 | -.467 | -.411 | | -.398 | -.333 | -.156 | .075 | -.634 | -.340 | -.201 | -.098 | -.012 | -.019 |
| 166. | .254 | -.496 | -.428 | | -.401 | -.334 | -.160 | .074 | -.536 | -.315 | -.178 | -.091 | -.006 | -.030 |
| 168. | .213 | -.537 | -.443 | | -.404 | -.333 | -.160 | .068 | -.434 | -.275 | -.159 | -.087 | -.002 | -.028 |
| 170. | .168 | -.566 | -.463 | | -.407 | -.333 | -.153 | .070 | -.346 | -.248 | -.138 | -.072 | .004 | -.019 |
| 172. | .106 | -.597 | -.489 | | -.418 | -.333 | -.158 | .073 | -.254 | -.204 | -.118 | -.059 | .010 | -.024 |
| 174. | .055 | -.633 | -.507 | | -.421 | -.331 | -.161 | .068 | -.158 | -.174 | -.097 | -.049 | .016 | -.033 |
| 176. | -.015 | -.680 | -.530 | | -.427 | -.332 | -.166 | .063 | -.077 | -.142 | -.074 | -.038 | .016 | -.029 |
| 178. | -.085 | -.716 | -.549 | | -.439 | -.341 | -.163 | .065 | .006 | -.109 | -.059 | -.027 | .024 | -.021 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 10 TIME 54541.600 MU= .356 CLP= .00421 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 180. | -.152 | -.760 | -.564 | | -.440 | -.338 | -.159 | .066 | .074 | -.074 | -.037 | -.016 | .030 | -.021 |
| 182. | -.248 | -.812 | -.592 | | -.448 | -.340 | -.163 | .068 | .146 | -.037 | -.011 | -.013 | .039 | -.022 |
| 184. | -.334 | -.854 | -.610 | | -.461 | -.336 | -.159 | .070 | .222 | .003 | .007 | -.013 | .045 | -.022 |
| 186. | -.425 | -.890 | -.627 | | -.472 | -.340 | -.155 | .067 | .296 | .040 | .036 | .008 | .055 | -.024 |
| 188. | -.522 | -.934 | -.645 | | -.471 | -.333 | -.160 | .064 | .362 | .062 | .055 | .024 | .060 | -.026 |
| 190. | -.624 | -.993 | -.680 | | -.467 | -.338 | -.165 | .066 | .435 | .093 | .086 | .039 | .062 | -.026 |
| 192. | -.732 | -1.044 | -.704 | | -.478 | -.348 | -.169 | .068 | .474 | .133 | .106 | .042 | .063 | -.027 |
| 194. | -.845 | -1.086 | -.725 | | -.477 | -.357 | -.174 | .067 | .516 | .160 | .123 | .058 | .067 | -.027 |
| 196. | -.965 | -1.131 | -.744 | | -.508 | -.346 | -.165 | .068 | .571 | .189 | .143 | .075 | .069 | -.027 |
| 198. | -1.092 | -1.175 | -.772 | | -.503 | -.355 | -.164 | .073 | .622 | .210 | .152 | .077 | .069 | -.029 |
| 200. | -1.213 | -1.226 | -.788 | | -.523 | -.363 | -.168 | .069 | .655 | .227 | .167 | .096 | .091 | -.027 |
| 202. | -1.341 | -1.272 | -.794 | | -.512 | -.351 | -.174 | .063 | .706 | .261 | .216 | .099 | .091 | -.030 |
| 204. | -1.474 | -1.311 | -.818 | | -.526 | -.361 | -.160 | .063 | .744 | .283 | .224 | .103 | .094 | -.032 |
| 206. | -1.618 | -1.351 | -.843 | | -.521 | -.343 | -.161 | .065 | .766 | .306 | .249 | .122 | .096 | -.033 |
| 208. | -1.780 | -1.392 | -.864 | | -.534 | -.353 | -.166 | .067 | .809 | .328 | .256 | .126 | .099 | -.034 |
| 210. | -1.932 | -1.434 | -.873 | | -.529 | -.362 | -.171 | .069 | .848 | .338 | .264 | .130 | .102 | -.036 |
| 212. | -2.101 | -1.477 | -.899 | | -.541 | -.344 | -.176 | .071 | .873 | .367 | .272 | .134 | .103 | -.037 |
| 214. | -2.287 | -1.497 | -.919 | | -.536 | -.354 | -.155 | .073 | .899 | .390 | .285 | .138 | .091 | -.038 |
| 216. | -2.483 | -1.537 | -.929 | | -.552 | -.365 | -.158 | .075 | .900 | .401 | .311 | .142 | .112 | -.039 |
| 218. | -2.712 | -1.555 | -.947 | | -.568 | -.369 | -.163 | .078 | .915 | .413 | .320 | .146 | .111 | -.040 |
| 220. | -2.933 | -1.597 | -.958 | | -.577 | -.351 | -.167 | .080 | .941 | .425 | .329 | .150 | .096 | -.041 |
| 222. | -3.155 | -1.611 | -.974 | | -.564 | -.361 | -.142 | .082 | .936 | .437 | .338 | .155 | .099 | -.042 |
| 224. | -3.387 | -1.622 | -.972 | | -.550 | -.371 | -.146 | .084 | .954 | .449 | .339 | .159 | .102 | -.043 |
| 226. | -3.562 | -1.666 | -.983 | | -.545 | -.369 | -.150 | .087 | .980 | .462 | .332 | .164 | .104 | -.045 |
| 228. | -3.665 | -1.674 | -.995 | | -.559 | -.353 | -.154 | .089 | .968 | .474 | .341 | .168 | .107 | -.046 |
| 230. | -3.725 | -1.681 | -1.009 | | -.574 | -.362 | -.158 | .091 | .987 | .453 | .350 | .172 | .110 | -.047 |
| 232. | -3.741 | -1.686 | -1.017 | | -.576 | -.353 | -.162 | .092 | .969 | .459 | .355 | .164 | .114 | -.048 |
| 234. | -3.672 | -1.689 | -1.010 | | -.572 | -.337 | -.165 | .083 | .944 | .471 | .364 | .141 | .117 | -.041 |
| 236. | -3.589 | -1.695 | -1.023 | | -.586 | -.345 | -.160 | .068 | .964 | .481 | .372 | .132 | .120 | -.018 |
| 238. | -3.419 | -1.726 | -1.025 | | -.583 | -.352 | -.135 | .073 | .985 | .492 | .378 | .135 | .124 | -.023 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 10 TIME 54541.600 MU= .356 CLP= .00421 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 240. | -3.280 | -1.722 | -1.036 | | -.579 | -.359 | -.138 | .084 | .957 | .460 | .368 | .138 | .112 | -.040 |
| 242. | -3.177 | -1.715 | -1.033 | | -.569 | -.367 | -.141 | .078 | .977 | .469 | .363 | .141 | .100 | -.016 |
| 244. | -3.103 | -1.706 | -1.017 | | -.565 | -.374 | -.144 | .086 | .990 | .478 | .349 | .144 | .084 | -.016 |
| 246. | -3.031 | -1.693 | -1.026 | | -.576 | -.381 | -.147 | .069 | .960 | .482 | .345 | .147 | .092 | -.017 |
| 248. | -3.000 | -1.692 | -1.015 | | -.586 | -.387 | -.149 | .070 | .977 | .449 | .351 | .149 | .105 | -.017 |
| 250. | -3.000 | -1.702 | -1.024 | | -.595 | -.360 | -.151 | .071 | .981 | .456 | .356 | .151 | .086 | -.017 |
| 252. | -3.008 | -1.681 | -1.006 | | -.574 | -.384 | -.154 | .072 | .950 | .463 | .361 | .154 | .077 | -.017 |
| 254. | -3.033 | -1.675 | -1.014 | | -.571 | -.367 | -.156 | .073 | .963 | .469 | .366 | .156 | .078 | -.018 |
| 256. | -3.019 | -1.673 | -.950 | | -.578 | -.358 | -.157 | .054 | .974 | .462 | .341 | .157 | .078 | -.018 |
| 258. | -3.000 | -1.665 | -.953 | | -.579 | -.363 | -.160 | .047 | .984 | .432 | .346 | .159 | .076 | -.020 |
| 260. | -2.976 | -1.655 | -.961 | | -.583 | -.367 | -.162 | .051 | .993 | .435 | .350 | .160 | .076 | -.023 |
| 262. | -2.968 | -1.618 | -.968 | | -.550 | -.370 | -.163 | .051 | 1.000 | .439 | .353 | .130 | .077 | -.023 |
| 264. | -2.961 | -1.633 | -.972 | | -.548 | -.372 | -.164 | .051 | 1.006 | .441 | .355 | .129 | .077 | -.023 |
| 266. | -2.922 | -1.631 | -.938 | | -.551 | -.373 | -.165 | .052 | 1.010 | .443 | .321 | .130 | .078 | -.023 |
| 268. | -2.904 | -1.586 | -.940 | | -.594 | -.374 | -.165 | .052 | 1.012 | .444 | .321 | .130 | .078 | -.023 |
| 270. | -2.851 | -1.569 | -.941 | | -.552 | -.374 | -.165 | .080 | .983 | .444 | .321 | .128 | .078 | -.023 |
| 272. | -2.804 | -1.568 | -.940 | | -.552 | -.374 | -.165 | .058 | .952 | .444 | .321 | .097 | .078 | -.023 |
| 274. | -2.797 | -1.564 | -.930 | | -.551 | -.373 | -.165 | .052 | .950 | .416 | .320 | .097 | .078 | -.023 |
| 276. | -2.786 | -1.523 | -.894 | | -.549 | -.372 | -.164 | .051 | .946 | .391 | .319 | .096 | .077 | -.023 |
| 278. | -2.738 | -1.502 | -.889 | | -.546 | -.370 | -.163 | .051 | .941 | .388 | .317 | .096 | .077 | -.023 |
| 280. | -2.703 | -1.492 | -.883 | | -.542 | -.367 | -.162 | .051 | .934 | .386 | .315 | .095 | .073 | -.056 |
| 282. | -2.645 | -1.479 | -.878 | | -.537 | -.364 | -.161 | .050 | .926 | .382 | .312 | .094 | .042 | -.061 |
| 284. | -2.604 | -1.465 | -.873 | | -.533 | -.360 | -.159 | .050 | .957 | .377 | .307 | .094 | .042 | -.060 |
| 286. | -2.574 | -1.448 | -.863 | | -.541 | -.354 | -.156 | .040 | .963 | .373 | .288 | .093 | .045 | -.055 |
| 288. | -2.503 | -1.429 | -.852 | | -.553 | -.349 | -.154 | .040 | .951 | .368 | .260 | .082 | .044 | -.018 |
| 290. | -2.459 | -1.409 | -.840 | | -.517 | -.344 | -.152 | .039 | .937 | .363 | .257 | .060 | .036 | -.054 |
| 292. | -2.421 | -1.387 | -.827 | | -.509 | -.339 | -.149 | .039 | .923 | .357 | .253 | .059 | .012 | -.053 |
| 294. | -2.380 | -1.364 | -.813 | | -.514 | -.333 | -.147 | .038 | .907 | .351 | .248 | .058 | .012 | -.052 |
| 296. | -2.296 | -1.341 | -.816 | | -.529 | -.343 | -.150 | .037 | .891 | .345 | .244 | .057 | .012 | -.051 |
| 298. | -2.249 | -1.355 | -.818 | | -.519 | -.367 | -.180 | .036 | .874 | .338 | .239 | .056 | .011 | -.050 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 10 TIME 54541.600 MU= .356 CLP= .00421 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 300. | -2.204 | -1.328 | -.801 | | -.508 | -.360 | -.177 | .036 | .856 | .331 | .234 | .055 | .011 | -.049 |
| 302. | -2.157 | -1.299 | -.784 | | -.497 | -.352 | -.173 | .035 | .838 | .324 | .229 | .068 | .023 | -.048 |
| 304. | -2.109 | -1.271 | -.767 | | -.486 | -.344 | -.169 | .034 | .868 | .317 | .224 | .064 | .038 | -.040 |
| 306. | -2.060 | -1.248 | -.769 | | -.475 | -.336 | -.165 | .033 | .848 | .310 | .219 | .051 | .037 | -.015 |
| 308. | -2.011 | -1.248 | -.762 | | -.482 | -.328 | -.161 | .033 | .828 | .302 | .214 | .050 | .037 | -.014 |
| 310. | -1.961 | -1.226 | -.743 | | -.484 | -.342 | -.157 | .032 | .811 | .295 | .209 | .049 | .036 | -.014 |
| 312. | -1.911 | -1.222 | -.724 | | -.472 | -.351 | -.153 | .031 | .831 | .290 | .203 | .047 | .035 | -.014 |
| 314. | -1.861 | -1.200 | -.705 | | -.459 | -.342 | -.163 | .030 | .809 | .312 | .198 | .030 | .034 | -.023 |
| 316. | -1.811 | -1.202 | -.686 | | -.467 | -.333 | -.177 | .029 | .787 | .277 | .193 | .022 | .033 | -.040 |
| 318. | -1.762 | -1.191 | -.712 | | -.463 | -.324 | -.172 | .029 | .774 | .293 | .187 | .021 | .032 | -.039 |
| 320. | -1.713 | -1.158 | -.701 | | -.471 | -.339 | -.167 | .040 | .784 | .257 | .182 | .021 | .031 | -.038 |
| 322. | -1.665 | -1.138 | -.704 | | -.465 | -.315 | -.162 | .049 | .762 | .258 | .177 | .020 | .030 | -.037 |
| 324. | -1.617 | -1.123 | -.709 | | -.452 | -.322 | -.158 | .035 | .740 | .275 | .172 | .020 | .029 | -.036 |
| 326. | -1.571 | -1.105 | -.691 | | -.439 | -.321 | -.153 | .038 | .730 | .267 | .167 | .037 | .029 | -.035 |
| 328. | -1.525 | -1.101 | -.667 | | -.426 | -.311 | -.149 | .045 | .733 | .259 | .162 | .020 | .028 | -.034 |
| 330. | -1.492 | -1.097 | -.674 | | -.410 | -.329 | -.145 | .047 | .725 | .252 | .162 | -.000 | .025 | -.035 |
| 332. | -1.464 | -1.077 | -.655 | | -.401 | -.323 | -.157 | .044 | .724 | .244 | .153 | -.001 | .009 | -.033 |
| 334. | -1.421 | -1.060 | -.656 | | -.411 | -.313 | -.160 | .041 | .703 | .237 | .148 | -.018 | .007 | -.031 |
| 336. | -1.379 | -1.055 | -.642 | | -.421 | -.304 | -.155 | .040 | .682 | .229 | .144 | -.018 | .007 | -.030 |
| 338. | -1.338 | -1.048 | -.641 | | -.412 | -.294 | -.150 | .049 | .676 | .222 | .135 | -.017 | .008 | -.028 |
| 340. | -1.298 | -1.041 | -.624 | | -.401 | -.311 | -.163 | .050 | .671 | .215 | .114 | -.017 | .008 | -.040 |
| 342. | -1.246 | -1.034 | -.623 | | -.408 | -.302 | -.163 | .049 | .651 | .210 | .111 | -.016 | -.008 | -.044 |
| 344. | -1.200 | -1.026 | -.623 | | -.395 | -.296 | -.158 | .037 | .632 | .204 | .111 | -.016 | -.010 | -.044 |
| 346. | -1.165 | -1.018 | -.619 | | -.401 | -.310 | -.154 | .049 | .614 | .198 | .108 | -.015 | -.009 | -.044 |
| 348. | -1.131 | -1.010 | -.603 | | -.392 | -.301 | -.149 | .049 | .613 | .192 | .105 | -.015 | -.009 | -.042 |
| 350. | -1.098 | -1.002 | -.603 | | -.393 | -.296 | -.164 | .051 | .604 | .187 | .105 | -.015 | -.011 | -.058 |
| 352. | -1.067 | -1.010 | -.603 | | -.386 | -.307 | -.160 | .050 | .604 | .182 | .102 | -.014 | -.010 | -.058 |
| 354. | -1.037 | -1.004 | -.604 | | -.389 | -.302 | -.156 | .062 | .594 | .190 | .098 | -.014 | -.010 | -.056 |
| 356. | -1.007 | -1.011 | -.602 | | -.388 | -.309 | -.150 | .057 | .577 | .191 | .093 | -.013 | -.008 | -.053 |
| 358. | -.964 | -1.003 | -.601 | | -.400 | -.301 | -.146 | .056 | .562 | .171 | .087 | -.013 | -.008 | -.052 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 11 TIME 54648.800 MU= .370 CLP= .00433 TEMP(U60)= 10.6 C = 50.99 F

| X/C= | UPPER SURFACE CP VALUES .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | LOWER SURFACE CP VALUES .02 | .10 | .20 | .50 | .70 | .90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AZIMUTH | | | | | | | | | | | | | | |
| 0. | -.813 | -1.027 | -.582 | | -.391 | -.313 | -.154 | .043 | .510 | .133 | .050 | -.043 | -.026 | -.045 |
| 2. | -.724 | -1.028 | -.590 | | -.392 | -.306 | -.153 | .056 | .486 | .111 | .038 | -.042 | -.026 | -.045 |
| 4. | -.656 | -1.021 | -.576 | | -.383 | -.298 | -.149 | .056 | .460 | .100 | .024 | -.043 | -.026 | -.055 |
| 6. | -.592 | -1.010 | -.572 | | -.385 | -.307 | -.159 | .054 | .426 | .087 | .011 | -.053 | -.025 | -.056 |
| 8. | -.525 | -.999 | -.562 | | -.378 | -.299 | -.156 | .053 | .394 | .067 | .000 | -.062 | -.026 | -.055 |
| 10. | -.474 | -.989 | -.556 | | -.381 | -.293 | -.151 | .060 | .377 | .059 | -.004 | -.069 | -.035 | -.052 |
| 12. | -.418 | -.978 | -.544 | | -.374 | -.302 | -.147 | .047 | .354 | .047 | -.018 | -.073 | -.047 | -.073 |
| 14. | -.373 | -.969 | -.541 | | -.377 | -.312 | -.157 | .047 | .327 | .020 | -.036 | -.089 | -.061 | -.062 |
| 16. | -.321 | -.959 | -.539 | | -.378 | -.322 | -.155 | .062 | .287 | .011 | -.040 | -.094 | -.054 | -.062 |
| 18. | -.281 | -.937 | -.538 | | -.377 | -.326 | -.164 | .070 | .272 | -.001 | -.039 | -.095 | -.052 | -.061 |
| 20. | -.233 | -.928 | -.532 | | -.372 | -.322 | -.160 | .069 | .266 | -.004 | -.041 | -.102 | -.054 | -.060 |
| 22. | -.210 | -.920 | -.532 | | -.380 | -.325 | -.156 | .076 | .245 | -.004 | -.051 | -.105 | -.062 | -.070 |
| 24. | -.179 | -.900 | -.543 | | -.392 | -.323 | -.152 | .075 | .237 | -.005 | -.057 | -.107 | -.066 | -.078 |
| 26. | -.148 | -.892 | -.574 | | -.396 | -.329 | -.151 | .077 | .232 | -.016 | -.061 | -.113 | -.067 | -.074 |
| 28. | -.131 | -.874 | -.631 | | -.398 | -.331 | -.157 | .080 | .227 | -.017 | -.069 | -.120 | -.072 | -.075 |
| 30. | -.102 | -.867 | -.690 | | -.395 | -.330 | -.154 | .087 | .222 | -.017 | -.077 | -.121 | -.074 | -.084 |
| 32. | -.063 | -.850 | -.741 | | -.398 | -.337 | -.151 | .092 | .203 | -.029 | -.079 | -.119 | -.082 | -.088 |
| 34. | -.037 | -.833 | -.779 | | -.406 | -.338 | -.148 | .093 | .199 | -.029 | -.083 | -.117 | -.084 | -.079 |
| 36. | -.011 | -.815 | -.813 | | -.408 | -.338 | -.145 | .097 | .195 | -.040 | -.084 | -.129 | -.083 | -.078 |
| 38. | .014 | -.791 | -.839 | | -.416 | -.345 | -.143 | .100 | .191 | -.040 | -.082 | -.141 | -.091 | -.080 |
| 40. | .048 | -.778 | -.849 | | -.422 | -.345 | -.140 | .107 | .173 | -.050 | -.080 | -.141 | -.101 | -.085 |
| 42. | .070 | -.761 | -.853 | | -.425 | -.354 | -.138 | .109 | .158 | -.050 | -.101 | -.149 | -.107 | -.083 |
| 44. | .089 | -.738 | -.857 | | -.434 | -.357 | -.136 | .111 | .153 | -.061 | -.115 | -.162 | -.109 | -.082 |
| 46. | .102 | -.719 | -.855 | | -.440 | -.359 | -.134 | .114 | .138 | -.072 | -.122 | -.163 | -.112 | -.081 |
| 48. | .125 | -.705 | -.852 | | -.450 | -.357 | -.132 | .115 | .122 | -.080 | -.129 | -.177 | -.122 | -.079 |
| 50. | .153 | -.680 | -.840 | | -.463 | -.360 | -.124 | .120 | .107 | -.081 | -.135 | -.185 | -.130 | -.073 |
| 52. | .172 | -.654 | -.828 | | -.473 | -.359 | -.118 | .123 | .093 | -.091 | -.146 | -.195 | -.125 | -.073 |
| 54. | .188 | -.636 | -.818 | | -.478 | -.355 | -.112 | .126 | .079 | -.100 | -.153 | -.201 | -.133 | -.072 |
| 56. | .200 | -.618 | -.808 | | -.503 | -.350 | -.106 | .132 | .065 | -.110 | -.159 | -.205 | -.135 | -.067 |
| 58. | .218 | -.601 | -.798 | | -.532 | -.346 | -.099 | .133 | .048 | -.119 | -.171 | -.204 | -.139 | -.062 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 11 TIME 54648.800 MU= .370 CLP= .00433 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 60. | .236 | -.584 | -.781 | | -.561 | -.333 | -.089 | .136 | .027 | -.128 | -.177 | -.227 | -.139 | -.058 |
| 62. | .254 | -.569 | -.765 | | -.582 | -.319 | -.079 | .142 | .010 | -.137 | -.183 | -.226 | -.137 | -.052 |
| 64. | .272 | -.554 | -.743 | | -.586 | -.295 | -.069 | .148 | -.020 | -.151 | -.195 | -.243 | -.136 | -.049 |
| 66. | .294 | -.533 | -.721 | | -.616 | -.280 | -.052 | .150 | -.050 | -.170 | -.210 | -.247 | -.127 | -.042 |
| 68. | .321 | -.516 | -.699 | | -.628 | -.277 | -.048 | .150 | -.085 | -.188 | -.223 | -.251 | -.125 | -.039 |
| 70. | .348 | -.503 | -.677 | | -.631 | -.276 | -.040 | .154 | -.126 | -.212 | -.243 | -.251 | -.131 | -.038 |
| 72. | .375 | -.484 | -.649 | | -.627 | -.305 | -.031 | .149 | -.166 | -.235 | -.269 | -.268 | -.137 | -.038 |
| 74. | .396 | -.462 | -.619 | | -.623 | -.336 | -.030 | .149 | -.212 | -.258 | -.288 | -.278 | -.143 | -.033 |
| 76. | .420 | -.448 | -.589 | | -.632 | -.377 | -.038 | .144 | -.250 | -.292 | -.312 | -.286 | -.144 | -.032 |
| 78. | .440 | -.430 | -.570 | | -.622 | -.425 | -.046 | .143 | -.284 | -.318 | -.333 | -.305 | -.149 | -.026 |
| 80. | .457 | -.410 | -.548 | | -.623 | -.464 | -.046 | .134 | -.317 | -.342 | -.360 | -.327 | -.146 | -.017 |
| 82. | .475 | -.398 | -.527 | | -.624 | -.501 | -.054 | .131 | -.350 | -.377 | -.385 | -.346 | -.139 | -.015 |
| 84. | .485 | -.380 | -.506 | | -.608 | -.528 | -.055 | .127 | -.392 | -.414 | -.402 | -.369 | -.133 | -.009 |
| 86. | .502 | -.369 | -.490 | | -.596 | -.550 | -.063 | .126 | -.437 | -.452 | -.415 | -.385 | -.126 | -.009 |
| 88. | .512 | -.351 | -.477 | | -.584 | -.575 | -.063 | .121 | -.491 | -.490 | -.428 | -.400 | -.116 | -.002 |
| 90. | .522 | -.342 | -.466 | | -.581 | -.585 | -.062 | .115 | -.539 | -.529 | -.439 | -.418 | -.098 | -.002 |
| 92. | .531 | -.333 | -.454 | | -.573 | -.596 | -.053 | .128 | -.585 | -.552 | -.445 | -.432 | -.088 | -.002 |
| 94. | .541 | -.324 | -.447 | | -.562 | -.603 | -.045 | .129 | -.631 | -.572 | -.461 | -.442 | -.077 | -.002 |
| 96. | .552 | -.307 | -.440 | | -.554 | -.604 | -.036 | .136 | -.668 | -.600 | -.489 | -.455 | -.063 | .005 |
| 98. | .553 | -.297 | -.434 | | -.551 | -.605 | -.030 | .142 | -.693 | -.622 | -.515 | -.472 | -.056 | .006 |
| 100. | .564 | -.281 | -.428 | | -.550 | -.607 | -.030 | .142 | -.729 | -.644 | -.534 | -.486 | -.047 | .012 |
| 102. | .567 | -.273 | -.423 | | -.544 | -.609 | -.030 | .141 | -.744 | -.656 | -.550 | -.501 | -.037 | .013 |
| 104. | .569 | -.265 | -.422 | | -.539 | -.607 | -.030 | .142 | -.770 | -.669 | -.570 | -.526 | -.027 | .015 |
| 106. | .571 | -.257 | -.418 | | -.542 | -.605 | -.030 | .142 | -.787 | -.692 | -.586 | -.539 | -.017 | .021 |
| 108. | .566 | -.252 | -.413 | | -.539 | -.604 | -.031 | .145 | -.815 | -.716 | -.601 | -.550 | -.011 | .018 |
| 110. | .569 | -.253 | -.408 | | -.534 | -.597 | -.034 | .146 | -.843 | -.731 | -.614 | -.563 | -.005 | .015 |
| 112. | .565 | -.255 | -.409 | | -.525 | -.591 | -.043 | .144 | -.861 | -.745 | -.631 | -.569 | -.002 | .020 |
| 114. | .567 | -.257 | -.406 | | -.519 | -.579 | -.049 | .141 | -.880 | -.753 | -.645 | -.578 | -.006 | .017 |
| 116. | .562 | -.260 | -.401 | | -.508 | -.555 | -.053 | .143 | -.898 | -.770 | -.658 | -.570 | -.004 | .016 |
| 118. | .557 | -.266 | -.398 | | -.502 | -.521 | -.058 | .144 | -.909 | -.785 | -.672 | -.535 | -.002 | .024 |

FLT 63 RUN11

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 11 TIME 54648.800 MU= .370 CLP= .00433 TEMP(U60)= 10.6 C = 50.99 F

| X/C= | UPPER SURFACE CP VALUES .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | LOWER SURFACE CP VALUES .02 | .10 | .20 | .50 | .70 | .90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AZIMUTH | | | | | | | | | | | | | | |
| 120. | .553 | -.274 | -.387 | | -.499 | -.474 | -.064 | .140 | -.930 | -.793 | -.686 | -.471 | .009 | .026 |
| 122. | .548 | -.282 | -.375 | | -.503 | -.423 | -.068 | .138 | -.949 | -.802 | -.702 | -.384 | .013 | .022 |
| 124. | .544 | -.290 | -.347 | | -.509 | -.389 | -.075 | .135 | -.961 | -.817 | -.717 | -.291 | .013 | .022 |
| 126. | .536 | -.294 | -.318 | | -.493 | -.369 | -.079 | .134 | -.981 | -.842 | -.727 | -.215 | .007 | .023 |
| 128. | .526 | -.303 | -.286 | | -.488 | -.341 | -.080 | .131 | -1.015 | -.853 | -.737 | -.146 | -.000 | .023 |
| 130. | .523 | -.312 | -.283 | | -.484 | -.321 | -.082 | .127 | -1.037 | -.865 | -.746 | -.103 | .004 | .018 |
| 132. | .519 | -.323 | -.288 | | -.483 | -.312 | -.090 | .120 | -1.058 | -.882 | -.765 | -.082 | -.001 | .009 |
| 134. | .510 | -.332 | -.310 | | -.481 | -.316 | -.101 | .113 | -1.081 | -.902 | -.777 | -.062 | -.001 | .007 |
| 136. | .495 | -.337 | -.324 | | -.469 | -.332 | -.105 | .113 | -1.098 | -.911 | -.781 | -.062 | -.009 | .007 |
| 138. | .487 | -.343 | -.336 | | -.438 | -.338 | -.107 | .109 | -1.124 | -.920 | -.794 | -.058 | -.009 | .000 |
| 140. | .484 | -.348 | -.349 | | -.414 | -.333 | -.110 | .113 | -1.150 | -.936 | -.794 | -.074 | -.019 | -.004 |
| 142. | .481 | -.355 | -.353 | | -.410 | -.326 | -.112 | .108 | -1.171 | -.953 | -.745 | -.091 | -.019 | -.004 |
| 144. | .470 | -.370 | -.351 | | -.400 | -.319 | -.114 | .102 | -1.201 | -.956 | -.544 | -.100 | -.020 | -.004 |
| 146. | .453 | -.371 | -.352 | | -.404 | -.313 | -.116 | .103 | -1.229 | -.919 | -.338 | -.110 | -.028 | -.004 |
| 148. | .446 | -.376 | -.357 | | -.393 | -.316 | -.128 | .084 | -1.244 | -.763 | -.228 | -.119 | -.027 | -.002 |
| 150. | .442 | -.383 | -.364 | | -.377 | -.312 | -.132 | .090 | -1.233 | -.593 | -.225 | -.122 | -.029 | -.004 |
| 152. | .428 | -.402 | -.373 | | -.365 | -.316 | -.135 | .091 | -1.155 | -.498 | -.237 | -.124 | -.028 | -.005 |
| 154. | .399 | -.413 | -.383 | | -.365 | -.311 | -.138 | .084 | -1.025 | -.446 | -.243 | -.121 | -.021 | -.005 |
| 156. | .367 | -.434 | -.383 | | -.376 | -.317 | -.140 | .072 | -.894 | -.411 | -.244 | -.112 | -.020 | -.002 |
| 158. | .333 | -.458 | -.379 | | -.385 | -.324 | -.143 | .073 | -.762 | -.377 | -.230 | -.111 | -.018 | -.003 |
| 160. | .297 | -.469 | -.393 | | -.394 | -.327 | -.147 | .074 | -.651 | -.342 | -.210 | -.100 | -.008 | -.014 |
| 162. | .260 | -.481 | -.414 | | -.403 | -.325 | -.150 | .067 | -.557 | -.305 | -.183 | -.083 | -.002 | -.015 |
| 164. | .235 | -.508 | -.437 | | -.408 | -.327 | -.151 | .068 | -.461 | -.266 | -.160 | -.074 | .002 | -.026 |
| 166. | .180 | -.551 | -.458 | | -.411 | -.325 | -.144 | .070 | -.360 | -.239 | -.136 | -.071 | .009 | -.027 |
| 168. | .121 | -.594 | -.474 | | -.413 | -.327 | -.148 | .071 | -.272 | -.197 | -.109 | -.057 | .008 | -.028 |
| 170. | .058 | -.628 | -.494 | | -.415 | -.327 | -.153 | .069 | -.161 | -.168 | -.086 | -.048 | .012 | -.028 |
| 172. | -.007 | -.674 | -.512 | | -.426 | -.327 | -.157 | .071 | -.084 | -.121 | -.063 | -.037 | .018 | -.019 |
| 174. | -.077 | -.709 | -.526 | | -.430 | -.327 | -.156 | .073 | -.003 | -.089 | -.040 | -.022 | .024 | -.023 |
| 176. | -.153 | -.750 | -.541 | | -.427 | -.336 | -.150 | .075 | .083 | -.055 | -.023 | -.011 | .031 | -.029 |
| 178. | -.246 | -.802 | -.560 | | -.433 | -.335 | -.148 | .077 | .171 | -.020 | -.002 | .001 | .039 | -.020 |

FLT 63 RUN11

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 11 TIME 54648.800 MU= .370 CLP= .00433 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 180. | -.329 | -.849 | -.596 | | -.449 | -.335 | -.142 | .070 | .241 | .015 | .021 | .005 | .047 | -.020 |
| 182. | -.416 | -.905 | -.619 | | -.449 | -.332 | -.146 | .064 | .295 | .039 | .042 | .005 | .048 | -.019 |
| 184. | -.513 | -.951 | -.638 | | -.456 | -.335 | -.151 | .070 | .357 | .077 | .070 | .025 | .057 | -.022 |
| 186. | -.626 | -.992 | -.657 | | -.457 | -.330 | -.155 | .072 | .431 | .105 | .079 | .032 | .063 | -.023 |
| 188. | -.730 | -1.030 | -.677 | | -.466 | -.334 | -.150 | .075 | .470 | .146 | .106 | .044 | .065 | -.024 |
| 190. | -.839 | -1.074 | -.705 | | -.481 | -.344 | -.146 | .077 | .517 | .172 | .128 | .060 | .078 | -.024 |
| 192. | -.964 | -1.117 | -.720 | | -.487 | -.333 | -.149 | .062 | .579 | .200 | .139 | .077 | .088 | -.013 |
| 194. | -1.092 | -1.163 | -.742 | | -.477 | -.341 | -.154 | .061 | .626 | .224 | .168 | .081 | .088 | -.015 |
| 196. | -1.209 | -1.200 | -.765 | | -.488 | -.352 | -.160 | .068 | .664 | .239 | .192 | .083 | .090 | -.016 |
| 198. | -1.335 | -1.238 | -.788 | | -.484 | -.341 | -.165 | .070 | .697 | .263 | .200 | .102 | .092 | -.009 |
| 200. | -1.466 | -1.292 | -.775 | | -.498 | -.349 | -.154 | .072 | .737 | .281 | .224 | .105 | .095 | -.009 |
| 202. | -1.618 | -1.327 | -.800 | | -.514 | -.334 | -.153 | .075 | .760 | .306 | .231 | .125 | .098 | -.009 |
| 204. | -1.779 | -1.360 | -.826 | | -.509 | -.343 | -.157 | .077 | .785 | .328 | .257 | .113 | .101 | -.009 |
| 206. | -1.948 | -1.404 | -.852 | | -.546 | -.354 | -.163 | .080 | .810 | .353 | .267 | .134 | .105 | -.010 |
| 208. | -2.143 | -1.429 | -.879 | | -.517 | -.364 | -.146 | .065 | .836 | .365 | .294 | .138 | .108 | -.010 |
| 210. | -2.361 | -1.446 | -.902 | | -.531 | -.346 | -.147 | .082 | .862 | .376 | .304 | .145 | .111 | -.010 |
| 212. | -2.590 | -1.485 | -.912 | | -.526 | -.354 | -.152 | .068 | .889 | .406 | .313 | .163 | .115 | -.011 |
| 214. | -2.852 | -1.532 | -.934 | | -.538 | -.335 | -.156 | .069 | .917 | .432 | .323 | .152 | .119 | -.011 |
| 216. | -3.115 | -1.554 | -.945 | | -.532 | -.345 | -.161 | .071 | .920 | .445 | .333 | .156 | .122 | -.011 |
| 218. | -3.356 | -1.597 | -.965 | | -.549 | -.356 | -.137 | .073 | .936 | .459 | .344 | .155 | .126 | -.012 |
| 220. | -3.597 | -1.616 | -.967 | | -.565 | -.359 | -.141 | .075 | .935 | .473 | .354 | .144 | .130 | -.012 |
| 222. | -3.792 | -1.631 | -.978 | | -.574 | -.341 | -.145 | .077 | .952 | .461 | .365 | .148 | .128 | -.012 |
| 224. | -3.979 | -1.643 | -.995 | | -.560 | -.351 | -.149 | .080 | .945 | .465 | .376 | .152 | .113 | -.013 |
| 226. | -4.073 | -1.690 | -.994 | | -.555 | -.361 | -.154 | .082 | .964 | .479 | .377 | .157 | .117 | -.013 |
| 228. | -4.150 | -1.701 | -1.005 | | -.558 | -.371 | -.153 | .084 | .952 | .492 | .370 | .161 | .112 | -.014 |
| 230. | -4.151 | -1.709 | -1.017 | | -.553 | -.367 | -.127 | .087 | .930 | .472 | .380 | .166 | .096 | -.014 |
| 232. | -4.139 | -1.715 | -1.029 | | -.553 | -.349 | -.131 | .089 | .949 | .479 | .377 | .170 | .099 | -.014 |
| 234. | -4.079 | -1.719 | -1.037 | | -.548 | -.358 | -.134 | .091 | .974 | .491 | .371 | .175 | .102 | -.015 |
| 236. | -4.008 | -1.721 | -1.029 | | -.562 | -.367 | -.137 | .094 | .949 | .504 | .381 | .164 | .104 | -.015 |
| 238. | -3.927 | -1.727 | -1.047 | | -.575 | -.376 | -.141 | .096 | .971 | .473 | .390 | .155 | .107 | -.015 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 11 TIME 54648.800 MU= .370 CLP= .00433 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 240. | -3.830 | -1.759 | -1.052 | | -.595 | -.382 | -.143 | .082 | .939 | .480 | .390 | .159 | .113 | -.014 |
| 242. | -3.687 | -1.753 | -1.063 | | -.590 | -.388 | -.144 | .063 | .959 | .490 | .373 | .163 | .118 | -.008 |
| 244. | -3.574 | -1.744 | -1.032 | | -.586 | -.396 | -.147 | .072 | .979 | .501 | .368 | .166 | .121 | -.008 |
| 246. | -3.450 | -1.745 | -1.031 | | -.598 | -.404 | -.150 | .054 | .998 | .506 | .375 | .169 | .123 | -.008 |
| 248. | -3.336 | -1.762 | -1.050 | | -.609 | -.379 | -.153 | .054 | 1.017 | .471 | .382 | .173 | .105 | -.008 |
| 250. | -3.292 | -1.744 | -1.068 | | -.590 | -.366 | -.155 | .055 | 1.012 | .479 | .362 | .151 | .094 | -.008 |
| 252. | -3.254 | -1.740 | -1.057 | | -.587 | -.371 | -.157 | .056 | .931 | .486 | .358 | .145 | .096 | -.008 |
| 254. | -3.248 | -1.745 | -1.066 | | -.600 | -.375 | -.159 | .052 | .943 | .491 | .357 | .148 | .100 | -.006 |
| 256. | -3.236 | -1.737 | -1.031 | | -.608 | -.378 | -.160 | .048 | .955 | .498 | .360 | .178 | .102 | -.004 |
| 258. | -3.238 | -1.733 | -1.037 | | -.605 | -.387 | -.164 | .060 | .967 | .492 | .378 | .155 | .097 | -.009 |
| 260. | -3.248 | -1.698 | -1.046 | | -.608 | -.392 | -.167 | .069 | .976 | .459 | .384 | .152 | .096 | -.014 |
| 262. | -3.241 | -1.686 | -.971 | | -.613 | -.395 | -.168 | .069 | .960 | .462 | .387 | .153 | .097 | -.014 |
| 264. | -3.236 | -1.696 | -.977 | | -.576 | -.397 | -.169 | .070 | .926 | .465 | .353 | .154 | .098 | -.014 |
| 266. | -3.196 | -1.703 | -.982 | | -.575 | -.399 | -.170 | .070 | .930 | .467 | .353 | .154 | .098 | -.014 |
| 268. | -3.176 | -1.676 | -.997 | | -.576 | -.400 | -.170 | .070 | .932 | .466 | .354 | .121 | .098 | -.014 |
| 270. | -3.151 | -1.659 | -.985 | | -.589 | -.395 | -.167 | .054 | .932 | .466 | .337 | .154 | .072 | -.007 |
| 272. | -3.124 | -1.657 | -.986 | | -.576 | -.400 | -.169 | .067 | .932 | .468 | .354 | .120 | .062 | -.011 |
| 274. | -3.084 | -1.653 | -.993 | | -.576 | -.399 | -.170 | .070 | .929 | .465 | .351 | .120 | .098 | -.014 |
| 276. | -3.051 | -1.646 | -.977 | | -.584 | -.392 | -.166 | .020 | .926 | .463 | .336 | .120 | .069 | -.006 |
| 278. | -3.033 | -1.597 | -.971 | | -.569 | -.395 | -.168 | .031 | .921 | .462 | .349 | .118 | .061 | -.012 |
| 280. | -2.975 | -1.574 | -.964 | | -.565 | -.392 | -.167 | .067 | .914 | .459 | .347 | .118 | .061 | -.014 |
| 282. | -2.932 | -1.560 | -.955 | | -.560 | -.388 | -.165 | .068 | .905 | .455 | .344 | .125 | .060 | -.013 |
| 284. | -2.901 | -1.543 | -.945 | | -.554 | -.384 | -.164 | .068 | .939 | .450 | .340 | .131 | .060 | -.013 |
| 286. | -2.826 | -1.524 | -.934 | | -.547 | -.380 | -.162 | .067 | .945 | .444 | .336 | .081 | .059 | -.013 |
| 288. | -2.736 | -1.548 | -.921 | | -.539 | -.374 | -.159 | .066 | .932 | .438 | .331 | .080 | .058 | -.013 |
| 290. | -2.686 | -1.527 | -.907 | | -.531 | -.369 | -.157 | .065 | .918 | .432 | .326 | .078 | .057 | -.013 |
| 292. | -2.641 | -1.502 | -.892 | | -.522 | -.363 | -.154 | .064 | .903 | .424 | .321 | .077 | .056 | -.013 |
| 294. | -2.594 | -1.475 | -.876 | | -.528 | -.356 | -.152 | .063 | .935 | .417 | .315 | .076 | .055 | -.012 |
| 296. | -2.545 | -1.449 | -.859 | | -.542 | -.367 | -.149 | .055 | .974 | .409 | .309 | .074 | .054 | -.012 |
| 298. | -2.493 | -1.461 | -.842 | | -.531 | -.391 | -.154 | .035 | .961 | .401 | .303 | .073 | .053 | -.012 |

FLT 63 RUN11

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 11 TIME 54648.800 MU= .370 CLP= .00433 TEMP(U60)= 10.6 C = 50.99 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 300. | -2.439 | -1.430 | -.824 | | -.520 | -.382 | -.182 | .059 | .940 | .392 | .296 | .071 | .052 | -.012 |
| 302. | -2.385 | -1.404 | -.805 | | -.508 | -.374 | -.178 | .049 | .919 | .383 | .290 | .070 | .051 | -.011 |
| 304. | -2.328 | -1.405 | -.829 | | -.496 | -.365 | -.174 | .027 | .898 | .374 | .283 | .068 | .050 | -.011 |
| 306. | -2.279 | -1.379 | -.833 | | -.503 | -.356 | -.170 | .026 | .877 | .365 | .276 | .066 | .048 | -.011 |
| 308. | -2.294 | -1.375 | -.812 | | -.506 | -.370 | -.166 | .036 | .902 | .397 | .269 | .065 | .047 | -.011 |
| 310. | -2.234 | -1.348 | -.813 | | -.513 | -.380 | -.161 | .052 | .878 | .386 | .262 | .063 | .046 | -.010 |
| 312. | -2.174 | -1.350 | -.799 | | -.511 | -.369 | -.157 | .051 | .860 | .376 | .255 | .061 | .045 | -.010 |
| 314. | -2.114 | -1.338 | -.804 | | -.497 | -.359 | -.153 | .049 | .875 | .365 | .248 | .060 | .044 | -.010 |
| 316. | -2.063 | -1.312 | -.789 | | -.486 | -.348 | -.163 | .044 | .850 | .354 | .236 | .058 | .044 | -.008 |
| 318. | -2.030 | -1.309 | -.790 | | -.474 | -.337 | -.174 | .040 | .835 | .344 | .228 | .057 | .044 | -.006 |
| 320. | -1.970 | -1.291 | -.795 | | -.460 | -.354 | -.169 | .039 | .842 | .334 | .221 | .037 | .042 | -.018 |
| 322. | -1.912 | -1.267 | -.774 | | -.469 | -.353 | -.164 | .037 | .829 | .324 | .215 | .032 | .041 | -.019 |
| 324. | -1.855 | -1.260 | -.771 | | -.460 | -.342 | -.159 | .050 | .831 | .314 | .208 | .012 | .040 | -.019 |
| 326. | -1.799 | -1.237 | -.749 | | -.443 | -.333 | -.155 | .061 | .819 | .306 | .207 | .009 | .037 | -.031 |
| 328. | -1.757 | -1.215 | -.750 | | -.451 | -.323 | -.151 | .061 | .818 | .296 | .201 | .009 | .035 | -.032 |
| 330. | -1.719 | -1.207 | -.728 | | -.440 | -.314 | -.146 | .059 | .793 | .298 | .195 | .008 | .034 | -.031 |
| 332. | -1.666 | -1.197 | -.727 | | -.426 | -.331 | -.160 | .057 | .783 | .307 | .189 | .008 | .033 | -.030 |
| 334. | -1.615 | -1.187 | -.706 | | -.436 | -.324 | -.162 | .055 | .778 | .297 | .183 | .025 | .032 | -.029 |
| 336. | -1.565 | -1.177 | -.704 | | -.423 | -.314 | -.157 | .054 | .753 | .288 | .177 | .008 | .014 | -.028 |
| 338. | -1.516 | -1.165 | -.685 | | -.431 | -.304 | -.152 | .052 | .746 | .279 | .170 | .007 | .013 | -.042 |
| 340. | -1.469 | -1.154 | -.684 | | -.420 | -.321 | -.166 | .050 | .737 | .271 | .148 | .007 | .012 | -.046 |
| 342. | -1.424 | -1.142 | -.679 | | -.426 | -.313 | -.164 | .049 | .715 | .262 | .144 | .007 | -.005 | -.044 |
| 344. | -1.365 | -1.130 | -.663 | | -.415 | -.327 | -.159 | .047 | .693 | .254 | .139 | .004 | -.005 | -.059 |
| 346. | -1.316 | -1.118 | -.661 | | -.419 | -.320 | -.155 | .046 | .672 | .232 | .132 | -.008 | -.004 | -.060 |
| 348. | -1.259 | -1.106 | -.659 | | -.406 | -.331 | -.150 | .060 | .651 | .217 | .115 | -.008 | -.007 | -.058 |
| 350. | -1.183 | -1.093 | -.651 | | -.403 | -.321 | -.145 | .058 | .632 | .210 | .112 | -.008 | -.019 | -.056 |
| 352. | -1.138 | -1.081 | -.639 | | -.417 | -.311 | -.142 | .056 | .631 | .204 | .108 | -.012 | -.018 | -.054 |
| 354. | -1.088 | -1.087 | -.633 | | -.406 | -.307 | -.155 | .054 | .599 | .197 | .099 | -.021 | -.017 | -.053 |
| 356. | -1.036 | -1.076 | -.613 | | -.403 | -.312 | -.149 | .047 | .577 | .191 | .078 | -.025 | -.015 | -.048 |
| 358. | -.953 | -1.082 | -.609 | | -.400 | -.310 | -.145 | .061 | .560 | .170 | .069 | -.032 | -.015 | -.048 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 15 TIME 54494.400 MU= .243 CLP= .00372 TEMP(U60)= 19.8 C = 67.56 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 0. | -.296 | -.801 | -.456 | | -.300 | -.294 | -.153 | .083 | .215 | -.001 | -.048 | -.096 | -.057 | -.073 |
| 2. | -.263 | -.786 | -.448 | | -.294 | -.294 | -.150 | .082 | .195 | -.017 | -.056 | -.103 | -.063 | -.071 |
| 4. | -.236 | -.772 | -.451 | | -.299 | -.289 | -.148 | .080 | .187 | -.029 | -.066 | -.103 | -.065 | -.070 |
| 6. | -.208 | -.758 | -.444 | | -.296 | -.296 | -.152 | .079 | .165 | -.032 | -.076 | -.101 | -.072 | -.075 |
| 8. | -.183 | -.744 | -.436 | | -.301 | -.294 | -.155 | .077 | .143 | -.051 | -.096 | -.099 | -.073 | -.079 |
| 10. | -.150 | -.731 | -.439 | | -.298 | -.289 | -.152 | .076 | .122 | -.070 | -.097 | -.098 | -.071 | -.071 |
| 12. | -.125 | -.718 | -.432 | | -.303 | -.284 | -.158 | .061 | .102 | -.074 | -.105 | -.123 | -.070 | -.065 |
| 14. | -.102 | -.729 | -.436 | | -.299 | -.279 | -.160 | .090 | .083 | -.081 | -.114 | -.122 | -.077 | -.071 |
| 16. | -.078 | -.741 | -.440 | | -.305 | -.274 | -.157 | .091 | .064 | -.085 | -.112 | -.129 | -.086 | -.074 |
| 18. | -.063 | -.734 | -.443 | | -.312 | -.310 | -.154 | .090 | .046 | -.098 | -.121 | -.127 | -.085 | -.073 |
| 20. | -.041 | -.739 | -.437 | | -.307 | -.308 | -.161 | .088 | .029 | -.110 | -.129 | -.134 | -.084 | -.071 |
| 22. | -.021 | -.745 | -.439 | | -.303 | -.303 | -.161 | .087 | .003 | -.115 | -.137 | -.141 | -.082 | -.070 |
| 24. | .008 | -.746 | -.434 | | -.308 | -.312 | -.158 | .085 | -.020 | -.120 | -.144 | -.148 | -.090 | -.077 |
| 26. | .023 | -.738 | -.438 | | -.305 | -.308 | -.156 | .084 | -.036 | -.131 | -.152 | -.152 | -.089 | -.078 |
| 28. | .039 | -.736 | -.442 | | -.311 | -.316 | -.154 | .083 | -.051 | -.141 | -.159 | -.144 | -.096 | -.077 |
| 30. | .055 | -.737 | -.443 | | -.315 | -.313 | -.161 | .082 | -.066 | -.152 | -.166 | -.148 | -.094 | -.076 |
| 32. | .067 | -.739 | -.440 | | -.313 | -.322 | -.160 | .089 | -.080 | -.154 | -.171 | -.148 | -.093 | -.075 |
| 34. | .078 | -.751 | -.443 | | -.317 | -.329 | -.158 | .088 | -.094 | -.160 | -.171 | -.156 | -.093 | -.074 |
| 36. | .099 | -.754 | -.447 | | -.313 | -.325 | -.156 | .095 | -.108 | -.162 | -.178 | -.166 | -.099 | -.073 |
| 38. | .103 | -.756 | -.447 | | -.314 | -.323 | -.154 | .094 | -.121 | -.168 | -.182 | -.164 | -.097 | -.072 |
| 40. | .120 | -.757 | -.446 | | -.324 | -.329 | -.162 | .093 | -.134 | -.169 | -.182 | -.164 | -.096 | -.071 |
| 42. | .133 | -.770 | -.450 | | -.323 | -.328 | -.160 | .092 | -.147 | -.176 | -.189 | -.167 | -.097 | -.070 |
| 44. | .143 | -.773 | -.454 | | -.329 | -.333 | -.158 | .098 | -.148 | -.176 | -.192 | -.168 | -.102 | -.070 |
| 46. | .152 | -.775 | -.453 | | -.331 | -.334 | -.156 | .097 | -.158 | -.184 | -.193 | -.171 | -.100 | -.077 |
| 48. | .162 | -.767 | -.453 | | -.332 | -.338 | -.155 | .096 | -.158 | -.183 | -.196 | -.172 | -.099 | -.068 |
| 50. | .172 | -.769 | -.453 | | -.334 | -.339 | -.153 | .097 | -.169 | -.191 | -.198 | -.178 | -.098 | -.067 |
| 52. | .170 | -.763 | -.453 | | -.335 | -.343 | -.152 | .102 | -.181 | -.200 | -.204 | -.180 | -.097 | -.066 |
| 54. | .179 | -.764 | -.453 | | -.341 | -.339 | -.150 | .101 | -.180 | -.199 | -.206 | -.178 | -.097 | -.074 |
| 56. | .179 | -.760 | -.454 | | -.342 | -.342 | -.149 | .102 | -.178 | -.197 | -.204 | -.181 | -.099 | -.074 |
| 58. | .188 | -.761 | -.459 | | -.339 | -.345 | -.148 | .107 | -.177 | -.196 | -.203 | -.182 | -.102 | -.073 |

FLT 65 RUN15

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 15 TIME 54494.400 MU= .243 CLP= .00372 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 60. | .196 | -.755 | -.464 | | -.342 | -.348 | -.146 | .106 | -.188 | -.204 | -.206 | -.181 | -.101 | -.072 |
| 62. | .196 | -.750 | -.487 | | -.343 | -.351 | -.145 | .105 | -.188 | -.203 | -.207 | -.175 | -.100 | -.072 |
| 64. | .203 | -.745 | -.518 | | -.341 | -.348 | -.144 | .107 | -.198 | -.201 | -.206 | -.172 | -.100 | -.071 |
| 66. | .202 | -.743 | -.554 | | -.338 | -.346 | -.143 | .111 | -.197 | -.199 | -.199 | -.170 | -.099 | -.071 |
| 68. | .201 | -.745 | -.586 | | -.336 | -.344 | -.143 | .110 | -.193 | -.189 | -.196 | -.169 | -.099 | -.070 |
| 70. | .197 | -.741 | -.616 | | -.341 | -.342 | -.142 | .109 | -.180 | -.188 | -.195 | -.174 | -.098 | -.070 |
| 72. | .192 | -.738 | -.639 | | -.341 | -.341 | -.141 | .109 | -.169 | -.187 | -.194 | -.174 | -.098 | -.070 |
| 74. | .204 | -.735 | -.654 | | -.340 | -.339 | -.141 | .108 | -.175 | -.189 | -.199 | -.179 | -.102 | -.069 |
| 76. | .224 | -.727 | -.660 | | -.339 | -.338 | -.140 | .104 | -.199 | -.204 | -.212 | -.180 | -.104 | -.065 |
| 78. | .240 | -.720 | -.659 | | -.330 | -.337 | -.139 | .101 | -.228 | -.230 | -.226 | -.185 | -.103 | -.061 |
| 80. | .249 | -.713 | -.633 | | -.328 | -.336 | -.139 | .100 | -.260 | -.246 | -.234 | -.185 | -.103 | -.061 |
| 82. | .263 | -.701 | -.591 | | -.327 | -.344 | -.139 | .100 | -.289 | -.259 | -.248 | -.191 | -.103 | -.061 |
| 84. | .279 | -.690 | -.533 | | -.327 | -.345 | -.145 | .100 | -.326 | -.275 | -.256 | -.197 | -.103 | -.056 |
| 86. | .288 | -.674 | -.468 | | -.326 | -.345 | -.147 | .100 | -.357 | -.289 | -.270 | -.197 | -.102 | -.053 |
| 88. | .298 | -.654 | -.413 | | -.326 | -.354 | -.147 | .100 | -.388 | -.304 | -.277 | -.197 | -.102 | -.053 |
| 90. | .308 | -.647 | -.383 | | -.334 | -.344 | -.147 | .100 | -.419 | -.319 | -.285 | -.203 | -.102 | -.053 |
| 92. | .324 | -.634 | -.367 | | -.334 | -.344 | -.147 | .100 | -.450 | -.334 | -.292 | -.203 | -.102 | -.053 |
| 94. | .333 | -.622 | -.354 | | -.335 | -.345 | -.147 | .100 | -.481 | -.344 | -.293 | -.204 | -.096 | -.053 |
| 96. | .339 | -.599 | -.353 | | -.334 | -.345 | -.140 | .100 | -.513 | -.360 | -.301 | -.204 | -.096 | -.047 |
| 98. | .350 | -.571 | -.347 | | -.327 | -.346 | -.139 | .100 | -.544 | -.375 | -.308 | -.204 | -.096 | -.045 |
| 100. | .361 | -.551 | -.348 | | -.328 | -.345 | -.139 | .100 | -.570 | -.386 | -.308 | -.205 | -.096 | -.045 |
| 102. | .365 | -.533 | -.347 | | -.327 | -.337 | -.139 | .101 | -.580 | -.397 | -.311 | -.205 | -.096 | -.045 |
| 104. | .374 | -.507 | -.342 | | -.322 | -.338 | -.140 | .101 | -.582 | -.401 | -.318 | -.206 | -.096 | -.046 |
| 106. | .378 | -.505 | -.341 | | -.323 | -.339 | -.140 | .094 | -.575 | -.410 | -.319 | -.205 | -.090 | -.046 |
| 108. | .388 | -.499 | -.334 | | -.322 | -.341 | -.141 | .095 | -.565 | -.415 | -.320 | -.201 | -.091 | -.046 |
| 110. | .391 | -.482 | -.327 | | -.318 | -.339 | -.142 | .095 | -.555 | -.424 | -.322 | -.199 | -.091 | -.046 |
| 112. | .393 | -.474 | -.324 | | -.319 | -.333 | -.143 | .096 | -.535 | -.429 | -.323 | -.196 | -.092 | -.039 |
| 114. | .396 | -.467 | -.322 | | -.318 | -.335 | -.143 | .095 | -.523 | -.431 | -.322 | -.195 | -.090 | -.039 |
| 116. | .398 | -.460 | -.316 | | -.315 | -.333 | -.144 | .090 | -.514 | -.434 | -.320 | -.192 | -.086 | -.039 |
| 118. | .401 | -.453 | -.314 | | -.317 | -.329 | -.145 | .090 | -.528 | -.437 | -.318 | -.190 | -.084 | -.039 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 15 TIME 54494.400 MU= .243 CLP= .00372 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 120. | .404 | -.446 | -.312 | | -.315 | -.326 | -.144 | .091 | -.533 | -.431 | -.313 | -.188 | -.080 | -.040 |
| 122. | .407 | -.440 | -.306 | | -.313 | -.322 | -.136 | .092 | -.524 | -.434 | -.311 | -.185 | -.081 | -.041 |
| 124. | .410 | -.442 | -.305 | | -.311 | -.325 | -.140 | .093 | -.515 | -.427 | -.310 | -.184 | -.081 | -.047 |
| 126. | .404 | -.438 | -.307 | | -.309 | -.322 | -.141 | .093 | -.507 | -.430 | -.304 | -.185 | -.082 | -.041 |
| 128. | .406 | -.440 | -.304 | | -.296 | -.319 | -.142 | .091 | -.527 | -.424 | -.304 | -.187 | -.079 | -.041 |
| 130. | .400 | -.436 | -.305 | | -.288 | -.316 | -.143 | .088 | -.559 | -.417 | -.302 | -.184 | -.076 | -.041 |
| 132. | .403 | -.437 | -.301 | | -.291 | -.314 | -.145 | .088 | -.593 | -.421 | -.296 | -.184 | -.077 | -.042 |
| 134. | .396 | -.435 | -.302 | | -.294 | -.317 | -.142 | .089 | -.625 | -.414 | -.291 | -.180 | -.078 | -.042 |
| 136. | .388 | -.439 | -.298 | | -.297 | -.313 | -.138 | .087 | -.646 | -.407 | -.286 | -.175 | -.074 | -.043 |
| 138. | .384 | -.440 | -.300 | | -.294 | -.313 | -.140 | .083 | -.662 | -.398 | -.280 | -.169 | -.072 | -.043 |
| 140. | .386 | -.439 | -.304 | | -.295 | -.308 | -.142 | .085 | -.659 | -.382 | -.275 | -.169 | -.073 | -.044 |
| 142. | .378 | -.445 | -.306 | | -.291 | -.308 | -.143 | .086 | -.660 | -.375 | -.270 | -.165 | -.073 | -.044 |
| 144. | .367 | -.445 | -.303 | | -.293 | -.302 | -.145 | .087 | -.643 | -.368 | -.264 | -.166 | -.068 | -.045 |
| 146. | .352 | -.445 | -.306 | | -.288 | -.303 | -.141 | .083 | -.631 | -.361 | -.259 | -.154 | -.067 | -.045 |
| 148. | .344 | -.451 | -.310 | | -.291 | -.297 | -.139 | .081 | -.610 | -.354 | -.253 | -.154 | -.068 | -.046 |
| 150. | .337 | -.458 | -.305 | | -.285 | -.299 | -.141 | .082 | -.587 | -.346 | -.247 | -.149 | -.062 | -.047 |
| 152. | .329 | -.457 | -.310 | | -.289 | -.303 | -.143 | .083 | -.564 | -.343 | -.241 | -.151 | -.062 | -.047 |
| 154. | .320 | -.459 | -.314 | | -.293 | -.295 | -.145 | .084 | -.541 | -.338 | -.235 | -.153 | -.063 | -.048 |
| 156. | .305 | -.466 | -.319 | | -.287 | -.298 | -.147 | .085 | -.517 | -.317 | -.229 | -.146 | -.055 | -.049 |
| 158. | .291 | -.474 | -.323 | | -.291 | -.289 | -.140 | .087 | -.492 | -.302 | -.223 | -.132 | -.056 | -.042 |
| 160. | .282 | -.481 | -.319 | | -.285 | -.265 | -.140 | .088 | -.466 | -.280 | -.216 | -.141 | -.057 | -.040 |
| 162. | .264 | -.489 | -.324 | | -.288 | -.270 | -.142 | .090 | -.449 | -.265 | -.208 | -.127 | -.048 | -.041 |
| 164. | .240 | -.487 | -.329 | | -.283 | -.274 | -.145 | .074 | -.430 | -.269 | -.192 | -.128 | -.048 | -.041 |
| 166. | .225 | -.493 | -.335 | | -.288 | -.279 | -.147 | .073 | -.413 | -.257 | -.185 | -.120 | -.040 | -.042 |
| 168. | .204 | -.501 | -.341 | | -.293 | -.284 | -.138 | .074 | -.390 | -.242 | -.177 | -.111 | -.041 | -.043 |
| 170. | .178 | -.510 | -.347 | | -.295 | -.289 | -.140 | .076 | -.361 | -.232 | -.169 | -.098 | -.042 | -.044 |
| 172. | .162 | -.532 | -.353 | | -.291 | -.294 | -.142 | .077 | -.330 | -.221 | -.161 | -.099 | -.041 | -.044 |
| 174. | .138 | -.543 | -.360 | | -.296 | -.296 | -.145 | .079 | -.298 | -.210 | -.153 | -.101 | -.033 | -.045 |
| 176. | .109 | -.553 | -.366 | | -.298 | -.292 | -.148 | .079 | -.265 | -.187 | -.140 | -.103 | -.034 | -.046 |
| 178. | .079 | -.563 | -.373 | | -.294 | -.311 | -.150 | .071 | -.231 | -.171 | -.123 | -.097 | -.031 | -.047 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 55 RUN 15 TIME 54494.400 MU= .243 CLP= .00372 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 180. | .048 | -.574 | -.386 | | -.300 | -.311 | -.152 | .072 | -.196 | -.158 | -.113 | -.086 | -.024 | -.048 |
| 182. | .030 | -.600 | -.400 | | -.305 | -.305 | -.142 | .073 | -.142 | -.131 | -.103 | -.083 | -.025 | -.049 |
| 184. | -.017 | -.613 | -.408 | | -.311 | -.305 | -.145 | .075 | -.100 | -.114 | -.093 | -.078 | -.025 | -.050 |
| 186. | -.053 | -.640 | -.416 | | -.311 | -.299 | -.147 | .076 | -.060 | -.099 | -.082 | -.080 | -.021 | -.050 |
| 188. | -.089 | -.654 | -.424 | | -.309 | -.305 | -.150 | .078 | -.018 | -.084 | -.070 | -.070 | -.014 | -.051 |
| 190. | -.127 | -.682 | -.432 | | -.315 | -.311 | -.153 | .076 | .026 | -.051 | -.052 | -.060 | -.015 | -.052 |
| 192. | -.164 | -.695 | -.441 | | -.321 | -.308 | -.156 | .068 | .071 | -.034 | -.033 | -.061 | -.015 | -.054 |
| 194. | -.225 | -.712 | -.459 | | -.328 | -.304 | -.159 | .070 | .119 | -.016 | -.020 | -.048 | -.009 | -.055 |
| 196. | -.269 | -.745 | -.473 | | -.334 | -.310 | -.157 | .071 | .166 | .003 | -.006 | -.039 | -.003 | -.056 |
| 198. | -.330 | -.773 | -.483 | | -.331 | -.316 | -.149 | .072 | .195 | .020 | -.001 | -.040 | -.003 | -.057 |
| 200. | -.380 | -.794 | -.492 | | -.331 | -.322 | -.152 | .074 | .245 | .023 | .009 | -.041 | -.003 | -.053 |
| 202. | -.443 | -.823 | -.502 | | -.327 | -.315 | -.155 | .075 | .278 | .043 | .024 | -.041 | .005 | -.044 |
| 204. | -.493 | -.845 | -.512 | | -.340 | -.313 | -.158 | .077 | .329 | .064 | .040 | -.032 | .010 | -.044 |
| 206. | -.545 | -.882 | -.522 | | -.339 | -.319 | -.152 | .078 | .367 | .082 | .045 | -.029 | .011 | -.045 |
| 208. | -.598 | -.911 | -.546 | | -.341 | -.310 | -.146 | .080 | .414 | .088 | .058 | -.030 | .011 | -.046 |
| 210. | -.653 | -.929 | -.559 | | -.347 | -.309 | -.149 | .081 | .429 | .112 | .075 | -.019 | .011 | -.047 |
| 212. | -.710 | -.946 | -.569 | | -.339 | -.315 | -.152 | .083 | .464 | .130 | .079 | -.017 | .011 | -.048 |
| 214. | -.768 | -.964 | -.580 | | -.342 | -.321 | -.154 | .084 | .491 | .139 | .109 | -.004 | .011 | -.049 |
| 216. | -.829 | -.982 | -.591 | | -.348 | -.307 | -.144 | .086 | .510 | .157 | .115 | -.003 | .012 | -.050 |
| 218. | -.890 | -1.012 | -.583 | | -.355 | -.308 | -.140 | .087 | .548 | .168 | .117 | -.003 | .012 | -.051 |
| 220. | -.943 | -1.039 | -.593 | | -.361 | -.314 | -.143 | .089 | .575 | .185 | .119 | -.003 | .012 | -.052 |
| 222. | -.996 | -1.057 | -.604 | | -.367 | -.319 | -.145 | .091 | .585 | .188 | .121 | -.003 | .012 | -.052 |
| 224. | -1.049 | -1.075 | -.614 | | -.353 | -.300 | -.148 | .092 | .610 | .202 | .124 | -.002 | .012 | -.053 |
| 226. | -1.092 | -1.077 | -.624 | | -.339 | -.304 | -.150 | .094 | .635 | .219 | .144 | .013 | .013 | -.054 |
| 228. | -1.150 | -1.087 | -.631 | | -.344 | -.309 | -.134 | .095 | .645 | .222 | .146 | .014 | .013 | -.055 |
| 230. | -1.203 | -1.104 | -.624 | | -.350 | -.313 | -.133 | .097 | .655 | .226 | .148 | .014 | .013 | -.056 |
| 232. | -1.248 | -1.121 | -.633 | | -.355 | -.316 | -.155 | .098 | .684 | .244 | .151 | .014 | .013 | -.057 |
| 234. | -1.293 | -1.137 | -.643 | | -.360 | -.323 | -.139 | .100 | .707 | .258 | .153 | .014 | .013 | -.058 |
| 236. | -1.319 | -1.153 | -.652 | | -.361 | -.327 | -.139 | .101 | .717 | .262 | .155 | .014 | .014 | -.058 |
| 238. | -1.357 | -1.168 | -.653 | | -.343 | -.327 | -.140 | .102 | .726 | .265 | .157 | .019 | .014 | -.059 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 15 TIME 54494.400 MU= .243 CLP= .00372 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 240. | -1.402 | -1.183 | -.647 | | -.335 | -.307 | -.142 | .104 | .735 | .268 | .159 | .027 | .014 | -.060 |
| 242. | -1.425 | -1.198 | -.655 | | -.350 | -.311 | -.144 | .105 | .744 | .272 | .161 | .015 | .014 | -.061 |
| 244. | -1.441 | -1.211 | -.662 | | -.337 | -.314 | -.146 | .104 | .753 | .275 | .163 | .015 | .014 | -.061 |
| 246. | -1.456 | -1.198 | -.660 | | -.341 | -.317 | -.147 | .088 | .761 | .278 | .164 | .015 | .009 | -.062 |
| 248. | -1.470 | -1.209 | -.654 | | -.344 | -.321 | -.149 | .088 | .739 | .280 | .166 | .015 | -.005 | -.063 |
| 250. | -1.484 | -1.193 | -.659 | | -.338 | -.323 | -.150 | .089 | .740 | .283 | .167 | .016 | -.005 | -.063 |
| 252. | -1.496 | -1.203 | -.665 | | -.336 | -.326 | -.151 | .090 | .746 | .285 | .169 | .016 | -.005 | -.064 |
| 254. | -1.507 | -1.212 | -.657 | | -.342 | -.329 | -.152 | .091 | .752 | .287 | .170 | .006 | -.005 | -.064 |
| 256. | -1.517 | -1.216 | -.651 | | -.331 | -.317 | -.153 | .091 | .757 | .289 | .171 | .007 | -.005 | -.065 |
| 258. | -1.524 | -1.199 | -.655 | | -.333 | -.301 | -.154 | .092 | .761 | .291 | .172 | .016 | -.005 | -.065 |
| 260. | -1.504 | -1.205 | -.658 | | -.334 | -.303 | -.155 | .092 | .765 | .292 | .173 | .016 | -.005 | -.065 |
| 262. | -1.510 | -1.210 | -.661 | | -.336 | -.304 | -.156 | .093 | .766 | .294 | .174 | .004 | -.005 | -.066 |
| 264. | -1.511 | -1.206 | -.646 | | -.337 | -.305 | -.156 | .093 | .771 | .295 | .174 | -.003 | -.005 | -.066 |
| 266. | -1.489 | -1.196 | -.641 | | -.337 | -.306 | -.156 | .093 | .772 | .295 | .175 | .010 | -.005 | -.066 |
| 268. | -1.491 | -1.218 | -.641 | | -.338 | -.306 | -.157 | .093 | .773 | .292 | .175 | .002 | -.005 | -.066 |
| 270. | -1.491 | -1.209 | -.642 | | -.321 | -.306 | -.157 | .093 | .774 | .266 | .175 | .011 | -.005 | -.066 |
| 272. | -1.463 | -1.179 | -.641 | | -.331 | -.306 | -.157 | .093 | .773 | .266 | .175 | .016 | -.005 | -.066 |
| 274. | -1.459 | -1.171 | -.641 | | -.319 | -.306 | -.156 | .093 | .772 | .266 | .175 | .000 | -.005 | -.066 |
| 276. | -1.446 | -1.173 | -.639 | | -.312 | -.305 | -.156 | .093 | .771 | .265 | .174 | .013 | -.005 | -.066 |
| 278. | -1.422 | -1.166 | -.637 | | -.311 | -.304 | -.156 | .093 | .768 | .265 | .155 | -.001 | -.005 | -.066 |
| 280. | -1.405 | -1.177 | -.635 | | -.310 | -.303 | -.155 | .092 | .765 | .264 | .151 | -.003 | -.005 | -.065 |
| 282. | -1.380 | -1.157 | -.632 | | -.330 | -.301 | -.154 | .092 | .749 | .262 | .151 | .014 | -.005 | -.065 |
| 284. | -1.372 | -1.137 | -.626 | | -.309 | -.300 | -.153 | .091 | .721 | .261 | .150 | .016 | -.005 | -.065 |
| 286. | -1.350 | -1.129 | -.624 | | -.327 | -.298 | -.152 | .091 | .717 | .259 | .149 | -.003 | -.005 | -.064 |
| 288. | -1.310 | -1.121 | -.619 | | -.303 | -.296 | -.151 | .090 | .711 | .257 | .148 | -.004 | -.005 | -.064 |
| 290. | -1.270 | -1.112 | -.614 | | -.300 | -.293 | -.150 | .089 | .706 | .242 | .146 | -.022 | -.005 | -.063 |
| 292. | -1.214 | -1.102 | -.606 | | -.297 | -.320 | -.149 | .088 | .682 | .225 | .145 | -.022 | -.005 | -.063 |
| 294. | -1.161 | -1.073 | -.581 | | -.295 | -.288 | -.147 | .088 | .658 | .223 | .144 | -.022 | -.024 | -.062 |
| 296. | -1.087 | -1.053 | -.574 | | -.312 | -.313 | -.146 | .087 | .632 | .206 | .138 | -.024 | -.024 | -.061 |
| 298. | -1.025 | -1.022 | -.563 | | -.288 | -.283 | -.144 | .086 | .611 | .176 | .097 | -.039 | -.041 | -.051 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 15 TIME 54494.400 MU= .243 CLP= .00372 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 300. | -.967 | -1.004 | -.540 | | -.288 | -.307 | -.142 | .085 | .583 | .162 | .079 | -.042 | -.024 | -.060 |
| 302. | -.900 | -.970 | -.533 | | -.299 | -.300 | -.141 | .084 | .563 | .144 | .074 | -.056 | -.041 | -.078 |
| 304. | -.834 | -.953 | -.526 | | -.277 | -.275 | -.139 | .083 | .534 | .132 | .058 | -.055 | -.040 | -.079 |
| 306. | -.809 | -.940 | -.519 | | -.278 | -.300 | -.137 | .081 | .517 | .130 | .057 | -.055 | -.040 | -.078 |
| 308. | -.777 | -.926 | -.511 | | -.291 | -.318 | -.157 | .080 | .509 | .110 | .050 | -.054 | -.039 | -.077 |
| 310. | -.740 | -.913 | -.504 | | -.286 | -.307 | -.155 | .080 | .502 | .102 | .036 | -.053 | -.038 | -.076 |
| 312. | -.724 | -.899 | -.496 | | -.282 | -.282 | -.153 | .095 | .494 | .100 | .029 | -.052 | -.038 | -.094 |
| 314. | -.713 | -.908 | -.497 | | -.278 | -.286 | -.150 | .094 | .486 | .099 | .017 | -.051 | -.037 | -.093 |
| 316. | -.679 | -.893 | -.499 | | -.281 | -.299 | -.148 | .092 | .478 | .077 | .017 | -.051 | -.037 | -.091 |
| 318. | -.666 | -.879 | -.491 | | -.288 | -.294 | -.145 | .091 | .470 | .072 | .017 | -.050 | -.036 | -.090 |
| 320. | -.654 | -.885 | -.493 | | -.292 | -.289 | -.143 | .089 | .462 | .071 | .016 | -.049 | -.035 | -.088 |
| 322. | -.643 | -.872 | -.492 | | -.288 | -.264 | -.140 | .088 | .454 | .070 | .016 | -.056 | -.041 | -.087 |
| 324. | -.631 | -.879 | -.484 | | -.263 | -.279 | -.143 | .086 | .446 | .068 | .016 | -.070 | -.049 | -.085 |
| 326. | -.620 | -.881 | -.486 | | -.297 | -.285 | -.155 | .084 | .438 | .067 | .016 | -.076 | -.049 | -.084 |
| 328. | -.609 | -.869 | -.483 | | -.300 | -.292 | -.152 | .083 | .430 | .087 | .015 | -.074 | -.048 | -.082 |
| 330. | -.597 | -.874 | -.486 | | -.294 | -.287 | -.149 | .061 | .422 | .085 | .015 | -.073 | -.047 | -.080 |
| 332. | -.586 | -.872 | -.482 | | -.289 | -.281 | -.146 | .080 | .414 | .063 | .015 | -.071 | -.054 | -.079 |
| 334. | -.575 | -.862 | -.486 | | -.295 | -.289 | -.151 | .078 | .406 | .064 | .014 | -.070 | -.059 | -.077 |
| 336. | -.564 | -.865 | -.493 | | -.295 | -.292 | -.158 | .077 | .398 | .081 | .014 | -.078 | -.058 | -.076 |
| 338. | -.553 | -.868 | -.487 | | -.301 | -.301 | -.155 | .075 | .391 | .079 | .014 | -.080 | -.057 | -.075 |
| 340. | -.543 | -.870 | -.490 | | -.300 | -.287 | -.152 | .081 | .383 | .078 | .014 | -.089 | -.056 | -.073 |
| 342. | -.532 | -.872 | -.496 | | -.294 | -.305 | -.149 | .086 | .376 | .076 | .002 | -.090 | -.055 | -.079 |
| 344. | -.522 | -.873 | -.489 | | -.301 | -.310 | -.146 | .084 | .369 | .070 | -.001 | -.088 | -.054 | -.085 |
| 346. | -.512 | -.866 | -.493 | | -.298 | -.289 | -.153 | .082 | .361 | .055 | -.001 | -.086 | -.053 | -.083 |
| 348. | -.495 | -.858 | -.484 | | -.305 | -.295 | -.156 | .081 | .354 | .054 | -.001 | -.074 | -.051 | -.082 |
| 350. | -.467 | -.849 | -.489 | | -.314 | -.292 | -.153 | .079 | .348 | .053 | -.013 | -.082 | -.050 | -.080 |
| 352. | -.441 | -.842 | -.479 | | -.310 | -.287 | -.150 | .078 | .324 | .046 | -.013 | -.081 | -.050 | -.076 |
| 354. | -.407 | -.833 | -.471 | | -.304 | -.298 | -.148 | .076 | .293 | .035 | -.025 | -.091 | -.059 | -.077 |
| 356. | -.373 | -.827 | -.474 | | -.298 | -.310 | -.145 | .084 | .278 | .027 | -.025 | -.090 | -.059 | -.076 |
| 358. | -.341 | -.817 | -.465 | | -.306 | -.305 | -.153 | .085 | .243 | .010 | -.038 | -.099 | -.058 | -.074 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 18 TIME 54782.700 MU= .241 CLP= .00619 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 0. | -.584 | -1.021 | -.558 | | -.328 | -.309 | -.163 | .089 | .444 | .111 | .027 | -.055 | -.026 | -.059 |
| 2. | -.512 | -1.002 | -.554 | | -.328 | -.313 | -.171 | .087 | .400 | .094 | .015 | -.059 | -.029 | -.058 |
| 4. | -.443 | -.987 | -.550 | | -.334 | -.307 | -.168 | .086 | .373 | .078 | .004 | -.058 | -.035 | -.059 |
| 6. | -.405 | -.996 | -.545 | | -.346 | -.301 | -.162 | .087 | .348 | .062 | -.007 | -.067 | -.038 | -.067 |
| 8. | -.341 | -.992 | -.535 | | -.347 | -.296 | -.153 | .093 | .325 | .047 | -.018 | -.075 | -.047 | -.066 |
| 10. | -.292 | -.986 | -.533 | | -.335 | -.305 | -.159 | .091 | .301 | .032 | -.033 | -.078 | -.052 | -.067 |
| 12. | -.232 | -.973 | -.528 | | -.335 | -.315 | -.160 | .087 | .262 | .004 | -.053 | -.092 | -.055 | -.074 |
| 14. | -.189 | -.983 | -.526 | | -.341 | -.317 | -.169 | .079 | .258 | -.010 | -.067 | -.102 | -.064 | -.073 |
| 16. | -.187 | -.992 | -.535 | | -.340 | -.326 | -.174 | .080 | .254 | .003 | -.065 | -.101 | -.063 | -.072 |
| 18. | -.197 | -1.003 | -.540 | | -.341 | -.335 | -.171 | .091 | .265 | .016 | -.054 | -.099 | -.057 | -.076 |
| 20. | -.206 | -1.022 | -.549 | | -.346 | -.336 | -.159 | .105 | .261 | .016 | -.049 | -.097 | -.061 | -.092 |
| 22. | -.201 | -1.027 | -.547 | | -.345 | -.338 | -.162 | .109 | .256 | .015 | -.054 | -.096 | -.064 | -.096 |
| 24. | -.182 | -1.024 | -.545 | | -.352 | -.339 | -.153 | .104 | .238 | .003 | -.063 | -.100 | -.068 | -.087 |
| 26. | -.144 | -1.020 | -.540 | | -.343 | -.334 | -.154 | .097 | .231 | -.010 | -.071 | -.112 | -.075 | -.083 |
| 28. | -.116 | -1.013 | -.539 | | -.330 | -.329 | -.159 | .096 | .198 | -.022 | -.085 | -.121 | -.078 | -.075 |
| 30. | -.078 | -.999 | -.534 | | -.325 | -.332 | -.156 | .098 | .166 | -.034 | -.101 | -.133 | -.082 | -.077 |
| 32. | -.043 | -.982 | -.519 | | -.333 | -.340 | -.158 | .101 | .134 | -.056 | -.112 | -.136 | -.084 | -.079 |
| 34. | -.017 | -.960 | -.511 | | -.348 | -.340 | -.162 | .100 | .106 | -.067 | -.119 | -.145 | -.083 | -.075 |
| 36. | .013 | -.948 | -.496 | | -.351 | -.343 | -.160 | .101 | .088 | -.079 | -.127 | -.147 | -.086 | -.079 |
| 38. | .027 | -.932 | -.480 | | -.353 | -.351 | -.158 | .104 | .059 | -.099 | -.133 | -.145 | -.088 | -.078 |
| 40. | .044 | -.913 | -.465 | | -.357 | -.351 | -.161 | .108 | .033 | -.107 | -.139 | -.144 | -.087 | -.078 |
| 42. | .038 | -.903 | -.467 | | -.363 | -.355 | -.164 | .107 | .027 | -.102 | -.140 | -.142 | -.086 | -.077 |
| 44. | .018 | -.896 | -.484 | | -.368 | -.355 | -.162 | .096 | .056 | -.080 | -.128 | -.140 | -.080 | -.072 |
| 46. | .013 | -.893 | -.541 | | -.373 | -.359 | -.160 | .092 | .090 | -.061 | -.103 | -.133 | -.066 | -.070 |
| 48. | .027 | -.883 | -.619 | | -.378 | -.351 | -.154 | .096 | .099 | -.060 | -.090 | -.125 | -.061 | -.078 |
| 50. | .048 | -.874 | -.684 | | -.390 | -.344 | -.143 | .106 | .095 | -.060 | -.093 | -.122 | -.061 | -.086 |
| 52. | .062 | -.861 | -.730 | | -.384 | -.340 | -.137 | .115 | .084 | -.059 | -.102 | -.121 | -.070 | -.089 |
| 54. | .062 | -.848 | -.773 | | -.385 | -.337 | -.136 | .117 | .090 | -.054 | -.095 | -.125 | -.079 | -.084 |
| 56. | .061 | -.840 | -.809 | | -.383 | -.334 | -.135 | .117 | .108 | -.040 | -.092 | -.131 | -.085 | -.080 |
| 58. | .061 | -.833 | -.835 | | -.366 | -.340 | -.133 | .116 | .103 | -.050 | -.098 | -.131 | -.086 | -.079 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS    NASA-LANGLEY AH-1G    78/11/15.

FLT 65 RUN 18  TIME 54782.700    MU= .241  CLP= .00619  TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 60. | .119 | -.827 | -.854 | | -.360 | -.340 | -.132 | .115 | .098 | -.054 | -.098 | -.130 | -.080 | -.078 |
| 62. | .152 | -.826 | -.872 | | -.343 | -.337 | -.131 | .114 | .109 | -.044 | -.104 | -.129 | -.078 | -.078 |
| 64. | .036 | -.825 | -.883 | | -.338 | -.335 | -.131 | .109 | .125 | -.034 | -.098 | -.134 | -.078 | -.073 |
| 66. | .025 | -.824 | -.901 | | -.336 | -.333 | -.130 | .106 | .144 | -.027 | -.096 | -.134 | -.077 | -.069 |
| 68. | .015 | -.829 | -.912 | | -.334 | -.331 | -.129 | .105 | .156 | -.023 | -.089 | -.127 | -.077 | -.073 |
| 70. | .009 | -.834 | -.924 | | -.332 | -.329 | -.128 | .109 | .172 | -.017 | -.088 | -.126 | -.076 | -.076 |
| 72. | .014 | -.839 | -.934 | | -.332 | -.327 | -.127 | .110 | .185 | -.017 | -.089 | -.132 | -.081 | -.075 |
| 74. | .024 | -.845 | -.937 | | -.329 | -.326 | -.127 | .115 | .185 | -.020 | -.094 | -.137 | -.082 | -.075 |
| 76. | .033 | -.846 | -.934 | | -.313 | -.325 | -.127 | .122 | .174 | -.030 | -.101 | -.143 | -.088 | -.075 |
| 78. | .048 | -.838 | -.938 | | -.295 | -.315 | -.120 | .123 | .155 | -.039 | -.108 | -.143 | -.088 | -.070 |
| 80. | .067 | -.831 | -.928 | | -.286 | -.313 | -.117 | .123 | .137 | -.049 | -.115 | -.149 | -.082 | -.067 |
| 82. | .061 | -.818 | -.925 | | -.261 | -.312 | -.117 | .118 | .113 | -.062 | -.122 | -.149 | -.087 | -.062 |
| 84. | .091 | -.804 | -.916 | | -.261 | -.311 | -.123 | .116 | .089 | -.077 | -.129 | -.155 | -.088 | -.059 |
| 86. | .100 | -.794 | -.907 | | -.252 | -.311 | -.125 | .116 | .065 | -.091 | -.143 | -.161 | -.081 | -.059 |
| 88. | .110 | -.790 | -.898 | | -.244 | -.311 | -.125 | .115 | .042 | -.105 | -.150 | -.161 | -.081 | -.059 |
| 90. | .119 | -.784 | -.890 | | -.236 | -.321 | -.125 | .115 | .018 | -.119 | -.157 | -.161 | -.081 | -.059 |
| 92. | .129 | -.775 | -.883 | | -.236 | -.321 | -.125 | .115 | -.012 | -.134 | -.164 | -.161 | -.081 | -.053 |
| 94. | .139 | -.772 | -.876 | | -.236 | -.321 | -.125 | .116 | -.041 | -.143 | -.171 | -.161 | -.081 | -.052 |
| 96. | .143 | -.767 | -.869 | | -.237 | -.322 | -.125 | .110 | -.058 | -.153 | -.178 | -.161 | -.075 | -.052 |
| 98. | .149 | -.766 | -.863 | | -.246 | -.332 | -.126 | .115 | -.077 | -.158 | -.178 | -.161 | -.075 | -.052 |
| 100. | .153 | -.760 | -.859 | | -.254 | -.333 | -.126 | .116 | -.101 | -.163 | -.180 | -.162 | -.075 | -.052 |
| 102. | .154 | -.760 | -.859 | | -.262 | -.334 | -.126 | .111 | -.118 | -.174 | -.186 | -.162 | -.075 | -.052 |
| 104. | .160 | -.763 | -.855 | | -.263 | -.336 | -.127 | .110 | -.130 | -.178 | -.187 | -.162 | -.075 | -.052 |
| 106. | .171 | -.759 | -.850 | | -.268 | -.345 | -.127 | .104 | -.143 | -.185 | -.188 | -.157 | -.075 | -.046 |
| 108. | .175 | -.760 | -.847 | | -.291 | -.338 | -.136 | .111 | -.156 | -.189 | -.189 | -.158 | -.069 | -.051 |
| 110. | .176 | -.764 | -.842 | | -.302 | -.339 | -.128 | .110 | -.168 | -.190 | -.191 | -.157 | -.069 | -.052 |
| 112. | .176 | -.768 | -.842 | | -.311 | -.341 | -.129 | .105 | -.182 | -.191 | -.189 | -.151 | -.069 | -.053 |
| 114. | .170 | -.772 | -.844 | | -.322 | -.343 | -.138 | .104 | -.187 | -.192 | -.186 | -.147 | -.063 | -.053 |
| 116. | .161 | -.769 | -.841 | | -.330 | -.346 | -.131 | .107 | -.196 | -.194 | -.184 | -.148 | -.064 | -.054 |
| 118. | .160 | -.773 | -.833 | | -.335 | -.346 | -.131 | .105 | -.201 | -.195 | -.181 | -.145 | -.063 | -.053 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 18 TIME 54782.700 MU= .241 CLP= .00619 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 120. | .161 | -.779 | -.803 | | -.343 | -.340 | -.132 | .108 | -.203 | -.189 | -.179 | -.137 | -.058 | -.055 |
| 122. | .154 | -.785 | -.743 | | -.346 | -.340 | -.133 | .109 | -.204 | -.188 | -.174 | -.136 | -.059 | -.055 |
| 124. | .153 | -.791 | -.663 | | -.349 | -.334 | -.135 | .103 | -.197 | -.189 | -.174 | -.132 | -.059 | -.055 |
| 126. | .146 | -.798 | -.583 | | -.352 | -.335 | -.136 | .104 | -.195 | -.184 | -.170 | -.133 | -.060 | -.056 |
| 128. | .137 | -.806 | -.520 | | -.352 | -.329 | -.137 | .104 | -.197 | -.183 | -.169 | -.134 | -.060 | -.056 |
| 130. | .128 | -.814 | -.487 | | -.350 | -.329 | -.138 | .098 | -.189 | -.177 | -.166 | -.136 | -.059 | -.057 |
| 132. | .118 | -.822 | -.479 | | -.351 | -.324 | -.138 | .097 | -.188 | -.176 | -.166 | -.137 | -.053 | -.057 |
| 134. | .118 | -.831 | -.470 | | -.346 | -.324 | -.131 | .098 | -.190 | -.178 | -.162 | -.136 | -.054 | -.057 |
| 136. | .110 | -.840 | -.462 | | -.339 | -.320 | -.133 | .101 | -.181 | -.171 | -.160 | -.130 | -.055 | -.050 |
| 138. | .100 | -.850 | -.454 | | -.337 | -.320 | -.135 | .102 | -.181 | -.171 | -.156 | -.127 | -.054 | -.051 |
| 140. | .090 | -.849 | -.455 | | -.341 | -.316 | -.135 | .096 | -.171 | -.164 | -.155 | -.126 | -.049 | -.052 |
| 142. | .080 | -.837 | -.457 | | -.331 | -.319 | -.128 | .097 | -.172 | -.164 | -.148 | -.120 | -.050 | -.052 |
| 144. | .069 | -.816 | -.453 | | -.312 | -.319 | -.130 | .098 | -.162 | -.157 | -.146 | -.117 | -.050 | -.053 |
| 146. | .069 | -.804 | -.449 | | -.317 | -.311 | -.131 | .098 | -.162 | -.157 | -.145 | -.118 | -.050 | -.053 |
| 148. | .059 | -.792 | -.446 | | -.320 | -.307 | -.133 | .099 | -.151 | -.149 | -.137 | -.116 | -.049 | -.053 |
| 150. | .048 | -.780 | -.443 | | -.325 | -.307 | -.133 | .094 | -.138 | -.150 | -.134 | -.110 | -.044 | -.046 |
| 152. | .036 | -.768 | -.439 | | -.325 | -.303 | -.127 | .096 | -.139 | -.141 | -.131 | -.099 | -.045 | -.046 |
| 154. | .024 | -.756 | -.436 | | -.319 | -.302 | -.129 | .095 | -.127 | -.142 | -.129 | -.093 | -.046 | -.047 |
| 156. | .012 | -.745 | -.438 | | -.319 | -.299 | -.131 | .090 | -.114 | -.133 | -.126 | -.094 | -.046 | -.048 |
| 158. | .012 | -.743 | -.439 | | -.324 | -.298 | -.133 | .091 | -.115 | -.134 | -.118 | -.096 | -.043 | -.049 |
| 160. | .011 | -.732 | -.436 | | -.324 | -.295 | -.135 | .090 | -.101 | -.124 | -.116 | -.097 | -.039 | -.049 |
| 162. | -.014 | -.729 | -.432 | | -.318 | -.300 | -.137 | .085 | -.103 | -.125 | -.112 | -.094 | -.040 | -.050 |
| 164. | -.028 | -.716 | -.436 | | -.318 | -.291 | -.139 | .087 | -.088 | -.114 | -.104 | -.097 | -.036 | -.051 |
| 166. | -.042 | -.715 | -.436 | | -.317 | -.281 | -.138 | .085 | -.072 | -.103 | -.096 | -.091 | -.032 | -.052 |
| 168. | -.057 | -.706 | -.432 | | -.311 | -.286 | -.132 | .080 | -.057 | -.091 | -.093 | -.092 | -.032 | -.053 |
| 170. | -.072 | -.715 | -.436 | | -.311 | -.291 | -.134 | .081 | -.040 | -.092 | -.069 | -.091 | -.033 | -.054 |
| 172. | -.088 | -.714 | -.436 | | -.310 | -.296 | -.137 | .083 | -.022 | -.081 | -.079 | -.083 | -.028 | -.051 |
| 174. | -.104 | -.713 | -.441 | | -.310 | -.293 | -.139 | .084 | .012 | -.081 | -.077 | -.081 | -.024 | -.044 |
| 176. | -.121 | -.716 | -.440 | | -.316 | -.291 | -.142 | .086 | .031 | -.068 | -.071 | -.082 | -.025 | -.045 |
| 178. | -.141 | -.725 | -.445 | | -.314 | -.296 | -.139 | .087 | .050 | -.054 | -.061 | -.077 | -.019 | -.046 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 18 TIME 54782.700 MU= .241 CLP= .00619 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 180. | -.172 | -.728 | -.444 | | -.315 | -.292 | -.134 | .089 | .070 | -.041 | -.051 | -.068 | -.015 | -.047 |
| 182. | -.191 | -.737 | -.450 | | -.321 | -.291 | -.136 | .091 | .090 | -.040 | -.046 | -.066 | -.015 | -.046 |
| 184. | -.211 | -.741 | -.458 | | -.318 | -.297 | -.139 | .092 | .112 | -.025 | -.041 | -.060 | -.016 | -.048 |
| 186. | -.231 | -.755 | -.457 | | -.320 | -.302 | -.142 | .094 | .134 | -.012 | -.029 | -.050 | -.009 | -.049 |
| 188. | -.256 | -.764 | -.463 | | -.316 | -.296 | -.144 | .096 | .157 | -.009 | -.017 | -.048 | -.005 | -.050 |
| 190. | -.296 | -.769 | -.472 | | -.318 | -.296 | -.147 | .098 | .181 | .007 | -.015 | -.049 | -.005 | -.051 |
| 192. | -.331 | -.784 | -.481 | | -.314 | -.302 | -.142 | .087 | .206 | .021 | -.005 | -.041 | -.005 | -.052 |
| 194. | -.356 | -.799 | -.479 | | -.316 | -.294 | -.138 | .077 | .232 | .025 | -.002 | -.049 | -.005 | -.053 |
| 196. | -.386 | -.808 | -.486 | | -.323 | -.295 | -.140 | .079 | .259 | .044 | .008 | -.043 | -.005 | -.048 |
| 198. | -.425 | -.814 | -.496 | | -.317 | -.300 | -.143 | .080 | .286 | .058 | .022 | -.041 | .004 | -.041 |
| 200. | -.458 | -.830 | -.505 | | -.320 | -.306 | -.146 | .082 | .309 | .064 | .025 | -.032 | .007 | -.042 |
| 202. | -.499 | -.846 | -.515 | | -.326 | -.312 | -.149 | .084 | .328 | .079 | .038 | -.020 | .007 | -.043 |
| 204. | -.535 | -.862 | -.525 | | -.332 | -.302 | -.152 | .085 | .368 | .086 | .053 | -.018 | .007 | -.044 |
| 206. | -.585 | -.888 | -.535 | | -.339 | -.303 | -.144 | .087 | .383 | .102 | .081 | -.019 | .007 | -.044 |
| 208. | -.629 | -.915 | -.546 | | -.331 | -.309 | -.140 | .080 | .415 | .110 | .087 | -.007 | .019 | -.045 |
| 210. | -.670 | -.932 | -.556 | | -.335 | -.315 | -.142 | .076 | .449 | .132 | .088 | -.006 | .022 | -.046 |
| 212. | -.725 | -.950 | -.566 | | -.341 | -.321 | -.145 | .077 | .474 | .149 | .090 | .007 | .022 | -.047 |
| 214. | -.782 | -.978 | -.577 | | -.331 | -.308 | -.148 | .079 | .492 | .159 | .106 | .008 | .022 | -.048 |
| 216. | -.830 | -1.006 | -.587 | | -.336 | -.310 | -.151 | .091 | .528 | .183 | .124 | .022 | .023 | -.049 |
| 218. | -.887 | -1.024 | -.598 | | -.342 | -.315 | -.140 | .097 | .554 | .200 | .128 | .023 | .023 | -.039 |
| 220. | -.950 | -1.042 | -.609 | | -.348 | -.299 | -.136 | .099 | .575 | .204 | .130 | .038 | .024 | -.033 |
| 222. | -1.000 | -1.060 | -.619 | | -.354 | -.302 | -.139 | .089 | .613 | .226 | .149 | .039 | .024 | -.033 |
| 224. | -1.076 | -1.091 | -.629 | | -.341 | -.307 | -.141 | .086 | .640 | .257 | .151 | .040 | .025 | -.034 |
| 226. | -1.141 | -1.118 | -.640 | | -.346 | -.312 | -.143 | .087 | .650 | .261 | .171 | .041 | .025 | -.047 |
| 228. | -1.196 | -1.136 | -.650 | | -.351 | -.317 | -.146 | .089 | .675 | .265 | .174 | .057 | .025 | -.054 |
| 230. | -1.264 | -1.154 | -.660 | | -.357 | -.322 | -.148 | .090 | .701 | .269 | .177 | .058 | .026 | -.055 |
| 232. | -1.333 | -1.171 | -.670 | | -.362 | -.327 | -.150 | .091 | .726 | .285 | .180 | .058 | .042 | -.056 |
| 234. | -1.388 | -1.204 | -.680 | | -.367 | -.332 | -.152 | .093 | .752 | .302 | .201 | .059 | .044 | -.056 |
| 236. | -1.448 | -1.228 | -.689 | | -.373 | -.309 | -.154 | .094 | .762 | .306 | .203 | .060 | .044 | -.057 |
| 238. | -1.519 | -1.245 | -.698 | | -.377 | -.313 | -.156 | .111 | .773 | .323 | .206 | .061 | .044 | -.058 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 18 TIME 54782.700 MU= .241 CLP= .00619 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 240. | -1.575 | -1.260 | -.707 | | -.380 | -.317 | -.139 | .115 | .800 | .340 | .211 | .062 | .028 | -.059 |
| 242. | -1.637 | -1.275 | -.716 | | -.367 | -.321 | -.137 | .116 | .824 | .344 | .231 | .062 | .029 | -.059 |
| 244. | -1.692 | -1.309 | -.719 | | -.386 | -.324 | -.159 | .117 | .833 | .347 | .233 | .063 | .045 | -.060 |
| 246. | -1.720 | -1.329 | -.710 | | -.350 | -.326 | -.122 | .119 | .842 | .351 | .236 | .064 | .028 | -.061 |
| 248. | -1.736 | -1.342 | -.718 | | -.354 | -.302 | -.118 | .120 | .850 | .355 | .238 | .064 | .029 | -.061 |
| 250. | -1.771 | -1.355 | -.726 | | -.357 | -.305 | -.141 | .121 | .857 | .373 | .239 | .065 | .029 | -.062 |
| 252. | -1.794 | -1.365 | -.729 | | -.362 | -.306 | -.120 | .116 | .864 | .387 | .237 | .065 | .031 | -.060 |
| 254. | -1.807 | -1.375 | -.734 | | -.362 | -.309 | -.144 | .104 | .871 | .391 | .244 | .066 | .032 | -.063 |
| 256. | -1.819 | -1.384 | -.739 | | -.365 | -.311 | -.146 | .104 | .877 | .393 | .250 | .066 | .049 | -.063 |
| 258. | -1.830 | -1.392 | -.745 | | -.367 | -.313 | -.147 | .105 | .882 | .396 | .268 | .067 | .049 | -.064 |
| 260. | -1.839 | -1.400 | -.752 | | -.369 | -.315 | -.123 | .105 | .910 | .396 | .267 | .067 | .050 | -.064 |
| 262. | -1.846 | -1.405 | -.756 | | -.373 | -.315 | -.147 | .099 | .923 | .398 | .264 | .067 | .051 | -.041 |
| 264. | -1.852 | -1.435 | -.770 | | -.375 | -.315 | -.147 | .099 | .925 | .418 | .263 | .067 | .052 | -.051 |
| 266. | -1.902 | -1.441 | -.782 | | -.378 | -.315 | -.146 | .094 | .927 | .426 | .259 | .067 | .053 | -.060 |
| 268. | -1.939 | -1.442 | -.778 | | -.377 | -.316 | -.146 | .095 | .930 | .429 | .263 | .068 | .053 | -.060 |
| 270. | -1.969 | -1.468 | -.778 | | -.373 | -.318 | -.148 | .106 | .931 | .430 | .279 | .068 | .050 | -.042 |
| 272. | -1.997 | -1.469 | -.790 | | -.373 | -.318 | -.124 | .106 | .959 | .452 | .293 | .068 | .050 | -.065 |
| 274. | -2.023 | -1.467 | -.802 | | -.373 | -.317 | -.124 | .105 | .964 | .456 | .290 | .068 | .050 | -.064 |
| 276. | -2.048 | -1.464 | -.800 | | -.373 | -.316 | -.122 | .103 | .962 | .456 | .288 | .068 | .051 | -.062 |
| 278. | -2.096 | -1.514 | -.809 | | -.371 | -.325 | -.123 | .124 | .988 | .454 | .297 | .067 | .044 | -.064 |
| 280. | -2.119 | -1.535 | -.815 | | -.369 | -.344 | -.125 | .117 | .990 | .476 | .307 | .067 | .031 | -.062 |
| 282. | -2.138 | -1.555 | -.823 | | -.396 | -.344 | -.147 | .108 | 1.016 | .479 | .318 | .067 | .030 | -.064 |
| 284. | -2.180 | -1.573 | -.841 | | -.384 | -.331 | -.150 | .124 | 1.045 | .500 | .337 | .083 | .030 | -.063 |
| 286. | -2.356 | -1.592 | -.858 | | -.409 | -.310 | -.170 | .123 | 1.073 | .525 | .347 | .103 | .029 | -.063 |
| 288. | -2.615 | -1.634 | -.874 | | -.406 | -.319 | -.168 | .122 | 1.099 | .548 | .354 | .102 | .037 | -.065 |
| 290. | -2.952 | -1.674 | -.877 | | -.403 | -.334 | -.167 | .121 | 1.155 | .571 | .362 | .101 | .048 | -.083 |
| 292. | -3.066 | -1.703 | -.856 | | -.399 | -.319 | -.160 | .120 | 1.150 | .544 | .359 | .100 | .047 | -.083 |
| 294. | -2.844 | -1.654 | -.814 | | -.395 | -.299 | -.134 | .129 | 1.075 | .487 | .325 | .090 | .039 | -.082 |
| 296. | -2.518 | -1.555 | -.775 | | -.391 | -.309 | -.115 | .155 | .966 | .404 | .261 | .071 | .020 | -.081 |
| 298. | -2.196 | -1.436 | -.732 | | -.387 | -.334 | -.121 | .153 | .889 | .346 | .210 | .053 | .002 | -.080 |

FLT 65 RUN18

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 18 TIME 54782.700 MU= .241 CLP= .00519 TEMP(U60)= 19.8 C = 67.58 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 300. | -1.885 | -1.331 | -.708 | | -.382 | -.345 | -.142 | .151 | .846 | .315 | .189 | .035 | -.008 | -.070 |
| 302. | -1.661 | -1.295 | -.699 | | -.376 | -.341 | -.163 | .138 | .804 | .310 | .176 | .017 | .001 | -.038 |
| 304. | -1.541 | -1.278 | -.690 | | -.373 | -.336 | -.177 | .106 | .794 | .306 | .166 | .010 | .010 | -.037 |
| 306. | -1.472 | -1.260 | -.680 | | -.368 | -.332 | -.174 | .093 | .785 | .302 | .164 | .020 | .009 | -.037 |
| 308. | -1.429 | -1.248 | -.671 | | -.362 | -.327 | -.164 | .091 | .802 | .298 | .161 | .015 | .009 | -.042 |
| 310. | -1.406 | -1.247 | -.675 | | -.357 | -.322 | -.156 | .090 | .790 | .293 | .159 | .009 | .000 | -.061 |
| 312. | -1.387 | -1.228 | -.670 | | -.352 | -.317 | -.167 | .095 | .778 | .289 | .156 | .009 | -.007 | -.079 |
| 314. | -1.365 | -1.221 | -.673 | | -.359 | -.312 | -.164 | .104 | .769 | .284 | .154 | .009 | -.007 | -.084 |
| 316. | -1.343 | -1.240 | -.667 | | -.347 | -.307 | -.161 | .102 | .782 | .280 | .152 | .009 | -.007 | -.071 |
| 318. | -1.320 | -1.235 | -.656 | | -.346 | -.317 | -.159 | .100 | .769 | .275 | .149 | .009 | -.007 | -.069 |
| 320. | -1.298 | -1.221 | -.659 | | -.348 | -.321 | -.156 | .099 | .760 | .270 | .146 | .009 | -.007 | -.062 |
| 322. | -1.276 | -1.221 | -.665 | | -.355 | -.316 | -.153 | .097 | .770 | .269 | .144 | -.002 | -.007 | -.050 |
| 324. | -1.253 | -1.220 | -.657 | | -.341 | -.310 | -.151 | .095 | .756 | .282 | .141 | -.006 | -.007 | -.049 |
| 326. | -1.231 | -1.219 | -.659 | | -.343 | -.304 | -.157 | .094 | .743 | .277 | .139 | -.006 | -.006 | -.048 |
| 328. | -1.208 | -1.217 | -.650 | | -.341 | -.314 | -.164 | .092 | .735 | .272 | .136 | -.006 | -.006 | -.054 |
| 330. | -1.186 | -1.214 | -.652 | | -.348 | -.315 | -.161 | .098 | .741 | .267 | .134 | .005 | -.006 | -.062 |
| 332. | -1.164 | -1.211 | -.656 | | -.346 | -.309 | -.158 | .110 | .727 | .262 | .131 | -.014 | -.006 | -.061 |
| 334. | -1.142 | -1.208 | -.646 | | -.339 | -.319 | -.155 | .114 | .713 | .257 | .129 | -.008 | -.006 | -.060 |
| 336. | -1.127 | -1.212 | -.648 | | -.346 | -.319 | -.152 | .112 | .700 | .252 | .126 | -.016 | -.016 | -.059 |
| 338. | -1.124 | -1.217 | -.651 | | -.342 | -.313 | -.149 | .110 | .700 | .253 | .124 | -.018 | -.019 | -.058 |
| 340. | -1.135 | -1.220 | -.653 | | -.349 | -.322 | -.156 | .108 | .740 | .271 | .145 | -.018 | -.018 | -.064 |
| 342. | -1.155 | -1.232 | -.656 | | -.357 | -.320 | -.159 | .106 | .779 | .297 | .170 | -.017 | -.008 | -.070 |
| 344. | -1.144 | -1.226 | -.644 | | -.353 | -.314 | -.156 | .104 | .772 | .299 | .158 | -.006 | -.005 | -.069 |
| 346. | -1.129 | -1.211 | -.645 | | -.359 | -.308 | -.153 | .102 | .735 | .281 | .142 | -.016 | -.005 | -.075 |
| 348. | -1.110 | -1.204 | -.633 | | -.354 | -.302 | -.140 | .108 | .707 | .270 | .150 | -.006 | -.005 | -.079 |
| 350. | -1.057 | -1.197 | -.621 | | -.360 | -.296 | -.142 | .110 | .694 | .248 | .136 | -.015 | -.015 | -.078 |
| 352. | -.979 | -1.164 | -.596 | | -.342 | -.291 | -.144 | .100 | .664 | .226 | .110 | -.026 | -.016 | -.068 |
| 354. | -.879 | -1.119 | -.584 | | -.334 | -.301 | -.142 | .094 | .603 | .200 | .083 | -.026 | -.026 | -.054 |
| 356. | -.766 | -1.073 | -.561 | | -.328 | -.297 | -.149 | .093 | .532 | .164 | .069 | -.036 | -.027 | -.057 |
| 358. | -.649 | -1.023 | -.551 | | -.321 | -.307 | -.150 | .091 | .464 | .130 | .045 | -.046 | -.036 | -.068 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 25 TIME 55583.000 MU= .241 CLP= .00512 TEMP(060)= 19.8 C = 67.61 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 0. | -.439 | -.874 | -.484 | | -.300 | -.271 | -.133 | .094 | .355 | .068 | .006 | -.070 | -.044 | -.059 |
| 2. | -.375 | -.858 | -.476 | | -.300 | -.270 | -.136 | .093 | .313 | .049 | -.014 | -.072 | -.049 | -.067 |
| 4. | -.337 | -.843 | -.467 | | -.294 | -.278 | -.147 | .091 | .285 | .020 | -.029 | -.085 | -.053 | -.066 |
| 6. | -.301 | -.828 | -.459 | | -.297 | -.283 | -.152 | .089 | .246 | .007 | -.039 | -.089 | -.052 | -.065 |
| 8. | -.266 | -.813 | -.460 | | -.305 | -.294 | -.149 | .088 | .224 | .004 | -.050 | -.095 | -.057 | -.064 |
| 10. | -.232 | -.804 | -.464 | | -.303 | -.294 | -.153 | .086 | .206 | -.010 | -.060 | -.095 | -.060 | -.063 |
| 12. | -.199 | -.798 | -.457 | | -.297 | -.289 | -.156 | .085 | .198 | -.024 | -.069 | -.101 | -.059 | -.062 |
| 14. | -.172 | -.790 | -.459 | | -.301 | -.284 | -.154 | .083 | .177 | -.034 | -.070 | -.101 | -.065 | -.066 |
| 16. | -.151 | -.790 | -.453 | | -.308 | -.301 | -.151 | .082 | .157 | -.037 | -.077 | -.100 | -.066 | -.070 |
| 18. | -.126 | -.784 | -.455 | | -.305 | -.303 | -.149 | .086 | .138 | -.050 | -.086 | -.098 | -.072 | -.069 |
| 20. | -.105 | -.778 | -.459 | | -.300 | -.275 | -.153 | .088 | .119 | -.062 | -.095 | -.096 | -.073 | -.068 |
| 22. | -.082 | -.778 | -.452 | | -.305 | -.300 | -.155 | .087 | .096 | -.074 | -.112 | -.119 | -.072 | -.067 |
| 24. | -.057 | -.779 | -.455 | | -.311 | -.314 | -.153 | .086 | .068 | -.086 | -.120 | -.127 | -.078 | -.066 |
| 26. | -.029 | -.786 | -.458 | | -.307 | -.311 | -.151 | .084 | .052 | -.097 | -.126 | -.133 | -.078 | -.071 |
| 28. | -.004 | -.792 | -.452 | | -.313 | -.307 | -.156 | .089 | .035 | -.104 | -.127 | -.140 | -.084 | -.074 |
| 30. | .015 | -.792 | -.456 | | -.319 | -.314 | -.157 | .091 | .013 | -.107 | -.134 | -.138 | -.084 | -.073 |
| 32. | .027 | -.793 | -.458 | | -.315 | -.323 | -.155 | .089 | -.010 | -.118 | -.141 | -.152 | -.083 | -.072 |
| 34. | .044 | -.801 | -.453 | | -.320 | -.332 | -.153 | .088 | -.025 | -.128 | -.148 | -.149 | -.082 | -.071 |
| 36. | .062 | -.806 | -.457 | | -.316 | -.328 | -.159 | .094 | -.039 | -.133 | -.155 | -.141 | -.081 | -.076 |
| 38. | .076 | -.807 | -.460 | | -.312 | -.324 | -.159 | .094 | -.053 | -.137 | -.161 | -.146 | -.087 | -.078 |
| 40. | .096 | -.808 | -.464 | | -.310 | -.332 | -.157 | .093 | -.067 | -.146 | -.160 | -.145 | -.087 | -.077 |
| 42. | .125 | -.809 | -.466 | | -.334 | -.329 | -.155 | .099 | -.088 | -.156 | -.167 | -.151 | -.093 | -.076 |
| 44. | .156 | -.803 | -.462 | | -.338 | -.337 | -.162 | .098 | -.123 | -.172 | -.174 | -.157 | -.092 | -.075 |
| 46. | .175 | -.794 | -.468 | | -.336 | -.344 | -.152 | .104 | -.136 | -.172 | -.186 | -.161 | -.091 | -.067 |
| 48. | .161 | -.794 | -.481 | | -.342 | -.342 | -.159 | .104 | -.110 | -.160 | -.180 | -.158 | -.088 | -.065 |
| 50. | .145 | -.796 | -.497 | | -.347 | -.350 | -.158 | .103 | -.078 | -.147 | -.157 | -.149 | -.073 | -.064 |
| 52. | .141 | -.799 | -.529 | | -.353 | -.357 | -.156 | .109 | -.059 | -.135 | -.149 | -.140 | -.068 | -.071 |
| 54. | .139 | -.802 | -.565 | | -.357 | -.354 | -.146 | .116 | -.055 | -.130 | -.148 | -.134 | -.074 | -.079 |
| 56. | .138 | -.796 | -.639 | | -.356 | -.350 | -.144 | .115 | -.054 | -.129 | -.149 | -.137 | -.081 | -.079 |
| 58. | .137 | -.799 | -.687 | | -.357 | -.348 | -.134 | .114 | -.054 | -.128 | -.153 | -.145 | -.088 | -.076 |

FLT 65 RUN25

AIRFOIL PRESSURE DATA .9 BLADE RADIUS    NASA-LANGLEY AH-1G    78/11/15.

FLT 65 RUN 25 TIME 55583.000    MU= .241 CLP= .00512 TEMP(U60)= 19.8 C = 67.61 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 60. | .145 | -.793 | -.724 | | -.351 | -.348 | -.134 | .119 | -.053 | -.135 | -.152 | -.147 | -.092 | -.078 |
| 62. | .154 | -.787 | -.757 | | -.354 | -.353 | -.141 | .112 | -.063 | -.136 | -.153 | -.152 | -.090 | -.069 |
| 64. | .163 | -.792 | -.781 | | -.349 | -.351 | -.140 | .111 | -.076 | -.143 | -.160 | -.156 | -.084 | -.069 |
| 66. | .164 | -.787 | -.797 | | -.341 | -.349 | -.139 | .111 | -.088 | -.135 | -.161 | -.155 | -.084 | -.066 |
| 68. | .153 | -.773 | -.805 | | -.339 | -.347 | -.138 | .110 | -.067 | -.134 | -.152 | -.154 | -.083 | -.068 |
| 70. | .133 | -.778 | -.813 | | -.341 | -.349 | -.138 | .109 | -.042 | -.116 | -.144 | -.150 | -.080 | -.068 |
| 72. | .112 | -.775 | -.825 | | -.344 | -.350 | -.137 | .109 | -.017 | -.104 | -.135 | -.146 | -.075 | -.067 |
| 74. | .101 | -.781 | -.838 | | -.346 | -.342 | -.136 | .108 | .019 | -.094 | -.127 | -.142 | -.075 | -.068 |
| 76. | .081 | -.788 | -.851 | | -.349 | -.340 | -.134 | .108 | .045 | -.083 | -.127 | -.141 | -.078 | -.074 |
| 78. | .091 | -.794 | -.864 | | -.348 | -.339 | -.127 | .110 | .057 | -.082 | -.130 | -.144 | -.081 | -.074 |
| 80. | .101 | -.791 | -.873 | | -.347 | -.338 | -.126 | .114 | .045 | -.092 | -.134 | -.147 | -.084 | -.072 |
| 82. | .110 | -.789 | -.873 | | -.337 | -.332 | -.126 | .114 | .032 | -.101 | -.141 | -.150 | -.088 | -.066 |
| 84. | .120 | -.786 | -.872 | | -.329 | -.332 | -.126 | .114 | .008 | -.111 | -.148 | -.153 | -.087 | -.066 |
| 86. | .130 | -.778 | -.871 | | -.324 | -.336 | -.126 | .113 | -.017 | -.130 | -.155 | -.160 | -.087 | -.064 |
| 88. | .140 | -.777 | -.864 | | -.321 | -.336 | -.126 | .113 | -.041 | -.140 | -.162 | -.166 | -.087 | -.058 |
| 90. | .150 | -.774 | -.856 | | -.321 | -.336 | -.126 | .113 | -.065 | -.150 | -.175 | -.168 | -.087 | -.058 |
| 92. | .160 | -.768 | -.854 | | -.321 | -.336 | -.129 | .113 | -.090 | -.160 | -.184 | -.168 | -.083 | -.058 |
| 94. | .170 | -.765 | -.849 | | -.321 | -.336 | -.134 | .110 | -.114 | -.170 | -.192 | -.169 | -.081 | -.055 |
| 96. | .177 | -.760 | -.842 | | -.321 | -.337 | -.134 | .107 | -.139 | -.180 | -.194 | -.169 | -.081 | -.051 |
| 98. | .180 | -.758 | -.829 | | -.322 | -.337 | -.135 | .107 | -.161 | -.190 | -.194 | -.169 | -.081 | -.051 |
| 100. | .188 | -.754 | -.822 | | -.329 | -.338 | -.135 | .107 | -.177 | -.198 | -.201 | -.169 | -.081 | -.051 |
| 102. | .192 | -.752 | -.816 | | -.332 | -.339 | -.135 | .108 | -.195 | -.199 | -.203 | -.170 | -.076 | -.051 |
| 104. | .199 | -.749 | -.810 | | -.333 | -.340 | -.136 | .108 | -.203 | -.204 | -.203 | -.165 | -.075 | -.051 |
| 106. | .200 | -.747 | -.798 | | -.334 | -.342 | -.136 | .106 | -.228 | -.222 | -.204 | -.165 | -.075 | -.051 |
| 108. | .204 | -.746 | -.778 | | -.336 | -.343 | -.132 | .109 | -.250 | -.230 | -.205 | -.165 | -.075 | -.052 |
| 110. | .212 | -.744 | -.710 | | -.337 | -.345 | -.129 | .109 | -.264 | -.231 | -.206 | -.166 | -.076 | -.052 |
| 112. | .213 | -.744 | -.632 | | -.339 | -.347 | -.130 | .105 | -.276 | -.236 | -.207 | -.161 | -.076 | -.052 |
| 114. | .214 | -.743 | -.545 | | -.341 | -.339 | -.130 | .103 | -.292 | -.244 | -.208 | -.161 | -.071 | -.052 |
| 116. | .215 | -.743 | -.484 | | -.343 | -.340 | -.131 | .104 | -.302 | -.246 | -.210 | -.162 | -.070 | -.053 |
| 118. | .217 | -.742 | -.455 | | -.346 | -.342 | -.132 | .105 | -.309 | -.247 | -.211 | -.157 | -.071 | -.053 |

FLT 65 RUN25

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 25 TIME 55583.000 MU= .241 CLP= .00512 TEMP(U60)= 19.8 C = 67.61 F

| X/C= AZIMUTH | UPPER SURFACE CP VALUES .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | LOWER SURFACE CP VALUES .02 | .10 | .20 | .50 | .70 | .90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 120. | .218 | -.738 | -.442 | | -.340 | -.334 | -.133 | .106 | -.319 | -.249 | -.213 | -.151 | -.071 | -.048 |
| 122. | .220 | -.733 | -.437 | | -.342 | -.336 | -.134 | .101 | -.327 | -.251 | -.207 | -.152 | -.065 | -.046 |
| 124. | .216 | -.722 | -.431 | | -.345 | -.328 | -.135 | .100 | -.337 | -.248 | -.208 | -.153 | -.072 | -.046 |
| 126. | .213 | -.708 | -.420 | | -.347 | -.319 | -.136 | .101 | -.340 | -.245 | -.210 | -.154 | -.066 | -.046 |
| 128. | .209 | -.694 | -.423 | | -.342 | -.322 | -.138 | .102 | -.343 | -.247 | -.204 | -.148 | -.066 | -.047 |
| 130. | .207 | -.687 | -.418 | | -.337 | -.314 | -.139 | .103 | -.336 | -.244 | -.205 | -.142 | -.060 | -.047 |
| 132. | .202 | -.684 | -.413 | | -.339 | -.317 | -.132 | .097 | -.336 | -.229 | -.199 | -.138 | -.060 | -.048 |
| 134. | .200 | -.680 | -.409 | | -.334 | -.319 | -.132 | .097 | -.340 | -.222 | -.194 | -.139 | -.061 | -.048 |
| 136. | .187 | -.686 | -.407 | | -.335 | -.312 | -.134 | .098 | -.335 | -.225 | -.195 | -.141 | -.061 | -.049 |
| 138. | .182 | -.675 | -.409 | | -.320 | -.314 | -.135 | .099 | -.334 | -.227 | -.190 | -.142 | -.055 | -.049 |
| 140. | .176 | -.671 | -.404 | | -.308 | -.307 | -.137 | .093 | -.338 | -.230 | -.191 | -.142 | -.055 | -.050 |
| 142. | .175 | -.668 | -.400 | | -.312 | -.311 | -.138 | .094 | -.332 | -.225 | -.187 | -.136 | -.056 | -.051 |
| 144. | .168 | -.655 | -.399 | | -.316 | -.310 | -.130 | .095 | -.311 | -.225 | -.186 | -.132 | -.057 | -.051 |
| 146. | .158 | -.651 | -.401 | | -.317 | -.294 | -.132 | .096 | -.308 | -.219 | -.180 | -.134 | -.057 | -.052 |
| 148. | .148 | -.659 | -.396 | | -.314 | -.298 | -.134 | .097 | -.300 | -.219 | -.173 | -.133 | -.056 | -.043 |
| 150. | .148 | -.623 | -.396 | | -.315 | -.299 | -.136 | .091 | -.301 | -.212 | -.170 | -.127 | -.051 | -.044 |
| 152. | .139 | -.631 | -.397 | | -.309 | -.294 | -.136 | .092 | -.280 | -.203 | -.169 | -.123 | -.052 | -.045 |
| 154. | .129 | -.640 | -.393 | | -.307 | -.284 | -.129 | .092 | -.253 | -.204 | -.162 | -.125 | -.052 | -.045 |
| 156. | .118 | -.638 | -.389 | | -.308 | -.262 | -.131 | .086 | -.253 | -.196 | -.159 | -.123 | -.050 | -.046 |
| 158. | .106 | -.635 | -.390 | | -.306 | -.266 | -.133 | .087 | -.257 | -.186 | -.157 | -.117 | -.045 | -.047 |
| 160. | .095 | -.632 | -.390 | | -.306 | -.270 | -.135 | .088 | -.246 | -.188 | -.149 | -.105 | -.042 | -.047 |
| 162. | .096 | -.630 | -.392 | | -.300 | -.274 | -.137 | .087 | -.233 | -.179 | -.142 | -.098 | -.037 | -.048 |
| 164. | .070 | -.627 | -.392 | | -.299 | -.279 | -.139 | .062 | -.220 | -.168 | -.134 | -.100 | -.038 | -.049 |
| 166. | .057 | -.624 | -.394 | | -.304 | -.284 | -.142 | .083 | -.207 | -.157 | -.131 | -.101 | -.039 | -.050 |
| 168. | .044 | -.624 | -.401 | | -.303 | -.289 | -.140 | .085 | -.192 | -.145 | -.128 | -.103 | -.035 | -.051 |
| 170. | .030 | -.635 | -.400 | | -.309 | -.294 | -.134 | .086 | -.161 | -.148 | -.119 | -.099 | -.030 | -.048 |
| 172. | .014 | -.646 | -.404 | | -.313 | -.290 | -.136 | .088 | -.144 | -.136 | -.110 | -.097 | -.031 | -.041 |
| 174. | -.014 | -.654 | -.411 | | -.306 | -.288 | -.139 | .089 | -.111 | -.123 | -.101 | -.086 | -.031 | -.042 |
| 176. | -.030 | -.655 | -.410 | | -.307 | -.294 | -.141 | .091 | -.092 | -.110 | -.091 | -.088 | -.026 | -.047 |
| 178. | -.049 | -.668 | -.414 | | -.304 | -.289 | -.144 | .093 | -.058 | -.097 | -.081 | -.085 | -.022 | -.055 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 25 TIME 55583.000 MU= .241 CLP= .00512 TEMP(060)= 19.8 C = 67.61 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 180. | -.082 | -.675 | -.422 | | -.305 | -.288 | -.140 | .094 | -.040 | -.085 | -.079 | -.084 | -.023 | -.052 |
| 182. | -.112 | -.678 | -.430 | | -.311 | -.293 | -.135 | .091 | -.016 | -.061 | -.072 | -.077 | -.023 | -.045 |
| 184. | -.135 | -.691 | -.438 | | -.307 | -.299 | -.138 | .087 | .020 | -.056 | -.061 | -.068 | -.016 | -.046 |
| 186. | -.167 | -.704 | -.435 | | -.309 | -.292 | -.141 | .082 | .046 | -.054 | -.050 | -.067 | -.013 | -.047 |
| 188. | -.193 | -.718 | -.442 | | -.315 | -.292 | -.143 | .078 | .083 | -.038 | -.038 | -.068 | -.013 | -.048 |
| 190. | -.226 | -.731 | -.450 | | -.321 | -.298 | -.145 | .080 | .106 | -.021 | -.026 | -.050 | -.013 | -.049 |
| 192. | -.255 | -.746 | -.459 | | -.315 | -.289 | -.140 | .081 | .137 | -.009 | -.024 | -.047 | -.013 | -.049 |
| 194. | -.296 | -.760 | -.468 | | -.306 | -.291 | -.136 | .083 | .177 | -.004 | -.013 | -.048 | -.004 | -.050 |
| 196. | -.339 | -.775 | -.477 | | -.310 | -.296 | -.139 | .085 | .204 | .015 | -.012 | -.049 | -.001 | -.051 |
| 198. | -.376 | -.790 | -.486 | | -.316 | -.302 | -.142 | .086 | .231 | .027 | .001 | -.039 | -.001 | -.052 |
| 200. | -.411 | -.806 | -.481 | | -.322 | -.308 | -.144 | .088 | .259 | .035 | .015 | -.039 | -.002 | -.053 |
| 202. | -.449 | -.821 | -.490 | | -.313 | -.295 | -.147 | .080 | .288 | .047 | .030 | -.027 | -.002 | -.045 |
| 204. | -.488 | -.837 | -.500 | | -.318 | -.299 | -.150 | .077 | .319 | .057 | .031 | -.027 | -.002 | -.040 |
| 206. | -.539 | -.866 | -.509 | | -.324 | -.305 | -.153 | .079 | .362 | .078 | .047 | -.027 | .011 | -.041 |
| 208. | -.579 | -.889 | -.519 | | -.330 | -.311 | -.142 | .080 | .395 | .090 | .063 | -.015 | .012 | -.042 |
| 210. | -.624 | -.906 | -.529 | | -.337 | -.294 | -.141 | .082 | .416 | .102 | .066 | -.015 | .013 | -.042 |
| 212. | -.679 | -.923 | -.542 | | -.343 | -.300 | -.143 | .084 | .436 | .115 | .097 | -.014 | .013 | -.043 |
| 214. | -.722 | -.955 | -.562 | | -.347 | -.305 | -.146 | .085 | .459 | .129 | .098 | -.001 | .013 | -.044 |
| 216. | -.772 | -.978 | -.559 | | -.337 | -.311 | -.149 | .087 | .495 | .153 | .100 | -.001 | .013 | -.045 |
| 218. | -.832 | -.996 | -.573 | | -.343 | -.314 | -.151 | .088 | .515 | .165 | .105 | -.001 | .013 | -.046 |
| 220. | -.893 | -1.013 | -.592 | | -.346 | -.297 | -.154 | .090 | .542 | .182 | .121 | .002 | .014 | -.046 |
| 222. | -.956 | -1.031 | -.589 | | -.336 | -.303 | -.156 | .091 | .580 | .194 | .126 | .014 | .014 | -.047 |
| 224. | -1.003 | -1.048 | -.598 | | -.341 | -.308 | -.139 | .093 | .599 | .197 | .142 | .014 | .014 | -.065 |
| 226. | -1.062 | -1.066 | -.608 | | -.347 | -.313 | -.141 | .094 | .630 | .217 | .144 | .019 | .014 | -.068 |
| 228. | -1.129 | -1.105 | -.618 | | -.353 | -.318 | -.143 | .096 | .649 | .228 | .152 | .031 | .015 | -.032 |
| 230. | -1.197 | -1.123 | -.628 | | -.358 | -.316 | -.145 | .097 | .659 | .249 | .167 | .031 | .015 | -.050 |
| 232. | -1.245 | -1.139 | -.637 | | -.363 | -.300 | -.147 | .099 | .693 | .278 | .170 | .032 | .015 | -.051 |
| 234. | -1.311 | -1.156 | -.646 | | -.361 | -.305 | -.149 | .100 | .710 | .288 | .172 | .039 | .015 | -.072 |
| 236. | -1.359 | -1.172 | -.655 | | -.360 | -.309 | -.149 | .102 | .719 | .292 | .175 | .050 | .016 | -.073 |
| 238. | -1.428 | -1.167 | -.664 | | -.362 | -.313 | -.134 | .103 | .729 | .296 | .177 | .051 | .022 | -.072 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 25 TIME 55583.000 MU= .241 CLP= .00512 TEMP(U60)= 19.8 C = 67.61 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 240. | -1.475 | -1.204 | -.672 | | -.339 | -.317 | -.155 | .104 | .738 | .300 | .188 | .051 | .028 | -.054 |
| 242. | -1.520 | -1.242 | -.680 | | -.343 | -.310 | -.157 | .105 | .747 | .303 | .201 | .052 | .016 | -.054 |
| 244. | -1.564 | -1.256 | -.688 | | -.347 | -.295 | -.159 | .107 | .786 | .307 | .203 | .052 | .016 | -.055 |
| 246. | -1.609 | -1.269 | -.695 | | -.351 | -.298 | -.155 | .108 | .797 | .310 | .206 | .053 | .016 | -.060 |
| 248. | -1.652 | -1.281 | -.702 | | -.342 | -.301 | -.138 | .109 | .804 | .313 | .208 | .054 | .017 | -.074 |
| 250. | -1.666 | -1.288 | -.694 | | -.334 | -.304 | -.139 | .110 | .811 | .316 | .209 | .054 | .017 | -.057 |
| 252. | -1.706 | -1.277 | -.691 | | -.336 | -.306 | -.140 | .111 | .816 | .318 | .211 | .054 | .017 | -.053 |
| 254. | -1.721 | -1.286 | -.696 | | -.339 | -.309 | -.141 | .112 | .824 | .321 | .213 | .055 | .017 | -.068 |
| 256. | -1.736 | -1.294 | -.701 | | -.341 | -.311 | -.142 | .105 | .830 | .324 | .214 | .055 | .017 | -.036 |
| 258. | -1.766 | -1.302 | -.705 | | -.343 | -.313 | -.143 | .093 | .834 | .353 | .215 | .043 | .017 | -.050 |
| 260. | -1.750 | -1.308 | -.708 | | -.345 | -.314 | -.144 | .093 | .838 | .354 | .216 | .050 | .017 | -.065 |
| 262. | -1.757 | -1.313 | -.711 | | -.346 | -.315 | -.144 | .094 | .842 | .356 | .217 | .056 | .017 | -.053 |
| 264. | -1.763 | -1.317 | -.713 | | -.347 | -.316 | -.145 | .094 | .844 | .357 | .218 | .056 | .017 | -.082 |
| 266. | -1.767 | -1.320 | -.715 | | -.348 | -.317 | -.145 | .094 | .846 | .358 | .218 | .056 | .018 | -.082 |
| 268. | -1.769 | -1.322 | -.716 | | -.330 | -.317 | -.145 | .094 | .847 | .358 | .219 | .056 | .018 | -.082 |
| 270. | -1.770 | -1.323 | -.716 | | -.324 | -.318 | -.145 | .094 | .848 | .358 | .219 | .056 | .018 | -.071 |
| 272. | -1.769 | -1.322 | -.716 | | -.324 | -.317 | -.145 | .094 | .847 | .358 | .219 | .056 | .018 | -.071 |
| 274. | -1.767 | -1.334 | -.715 | | -.344 | -.317 | -.145 | .094 | .846 | .358 | .218 | .056 | .018 | -.082 |
| 276. | -1.763 | -1.345 | -.713 | | -.327 | -.316 | -.145 | .094 | .856 | .357 | .218 | .056 | .017 | -.082 |
| 278. | -1.770 | -1.341 | -.711 | | -.322 | -.315 | -.144 | .094 | .877 | .356 | .217 | .038 | .017 | -.056 |
| 280. | -1.780 | -1.336 | -.709 | | -.342 | -.314 | -.144 | .093 | .874 | .355 | .236 | .037 | .017 | -.049 |
| 282. | -1.784 | -1.345 | -.728 | | -.343 | -.313 | -.143 | .093 | .870 | .364 | .237 | .037 | .017 | -.072 |
| 284. | -1.803 | -1.349 | -.724 | | -.341 | -.311 | -.142 | .107 | .865 | .379 | .235 | .055 | .017 | -.066 |
| 286. | -1.806 | -1.357 | -.719 | | -.339 | -.309 | -.141 | .097 | .875 | .377 | .234 | .055 | -.001 | -.058 |
| 288. | -1.808 | -1.358 | -.714 | | -.337 | -.307 | -.140 | .091 | .887 | .386 | .253 | .054 | -.002 | -.073 |
| 290. | -1.838 | -1.365 | -.711 | | -.334 | -.304 | -.139 | .090 | .880 | .398 | .252 | .054 | -.002 | -.079 |
| 292. | -1.878 | -1.361 | -.724 | | -.331 | -.301 | -.158 | .106 | .872 | .408 | .269 | .054 | -.002 | -.078 |
| 294. | -1.883 | -1.348 | -.713 | | -.328 | -.299 | -.141 | .108 | .864 | .404 | .267 | .055 | -.002 | -.077 |
| 296. | -1.812 | -1.315 | -.684 | | -.324 | -.295 | -.135 | .107 | .817 | .372 | .261 | .070 | .016 | -.093 |
| 298. | -1.692 | -1.235 | -.649 | | -.321 | -.292 | -.134 | .106 | .760 | .326 | .232 | .067 | -.002 | -.097 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 25 TIME 55583.000 MU= .241 CLP= .00512 TEMP(U60)= 19.8 C = 67.61 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 300. | -1.526 | -1.163 | -.603 | | -.314 | -.286 | -.111 | .104 | .698 | .284 | .173 | .044 | -.004 | -.096 |
| 302. | -1.330 | -1.097 | -.575 | | -.291 | -.261 | -.108 | .103 | .665 | .238 | .135 | .008 | -.022 | -.094 |
| 304. | -1.146 | -1.032 | -.552 | | -.287 | -.281 | -.106 | .102 | .635 | .199 | .117 | -.023 | -.037 | -.075 |
| 306. | -1.032 | -1.011 | -.545 | | -.284 | -.278 | -.127 | .082 | .595 | .188 | .116 | -.035 | -.034 | -.072 |
| 308. | -.960 | -.996 | -.537 | | -.279 | -.279 | -.147 | .081 | .577 | .185 | .114 | -.030 | -.019 | -.052 |
| 310. | -.915 | -.962 | -.537 | | -.281 | -.296 | -.145 | .064 | .568 | .183 | .113 | -.016 | -.019 | -.050 |
| 312. | -.896 | -.967 | -.541 | | -.298 | -.298 | -.164 | .079 | .583 | .180 | .111 | -.017 | -.019 | -.050 |
| 314. | -.902 | -.974 | -.540 | | -.301 | -.313 | -.162 | .078 | .580 | .177 | .109 | -.023 | -.023 | -.049 |
| 316. | -.891 | -.981 | -.551 | | -.289 | -.308 | -.159 | .078 | .571 | .174 | .107 | -.033 | -.034 | -.067 |
| 318. | -.898 | -1.010 | -.552 | | -.297 | -.303 | -.157 | .091 | .586 | .171 | .106 | -.032 | -.034 | -.067 |
| 320. | -.865 | -1.014 | -.543 | | -.292 | -.298 | -.151 | .090 | .580 | .168 | .104 | -.031 | -.033 | -.082 |
| 322. | -.869 | -.997 | -.543 | | -.287 | -.293 | -.135 | .088 | .570 | .165 | .087 | -.038 | -.032 | -.081 |
| 324. | -.854 | -.981 | -.542 | | -.290 | -.287 | -.149 | .087 | .560 | .163 | .068 | -.052 | -.032 | -.079 |
| 326. | -.860 | -.985 | -.542 | | -.304 | -.282 | -.146 | .085 | .550 | .160 | .066 | -.059 | -.031 | -.076 |
| 328. | -.845 | -.988 | -.539 | | -.308 | -.277 | -.143 | .084 | .540 | .157 | .065 | -.057 | -.031 | -.077 |
| 330. | -.829 | -.990 | -.540 | | -.302 | -.283 | -.141 | .082 | .556 | .154 | .064 | -.056 | -.030 | -.075 |
| 332. | -.814 | -.988 | -.547 | | -.296 | -.289 | -.144 | .081 | .545 | .151 | .063 | -.055 | -.030 | -.074 |
| 334. | -.799 | -.973 | -.542 | | -.300 | -.284 | -.153 | .084 | .535 | .148 | .053 | -.054 | -.036 | -.072 |
| 336. | -.784 | -.974 | -.543 | | -.302 | -.278 | -.150 | .091 | .525 | .145 | .046 | -.053 | -.042 | -.076 |
| 338. | -.769 | -.975 | -.537 | | -.306 | -.285 | -.147 | .090 | .517 | .144 | .045 | -.052 | -.041 | -.085 |
| 340. | -.754 | -.969 | -.538 | | -.306 | -.288 | -.145 | .088 | .528 | .159 | .054 | -.051 | -.040 | -.083 |
| 342. | -.743 | -.962 | -.543 | | -.311 | -.295 | -.142 | .086 | .518 | .156 | .057 | -.050 | -.040 | -.082 |
| 344. | -.748 | -.973 | -.548 | | -.310 | -.297 | -.139 | .085 | .512 | .153 | .056 | -.049 | -.039 | -.080 |
| 346. | -.752 | -.972 | -.540 | | -.304 | -.291 | -.144 | .083 | .525 | .153 | .055 | -.048 | -.038 | -.079 |
| 348. | -.755 | -.971 | -.542 | | -.309 | -.265 | -.149 | .088 | .537 | .164 | .054 | -.047 | -.037 | -.077 |
| 350. | -.753 | -.969 | -.533 | | -.307 | -.293 | -.146 | .099 | .543 | .161 | .073 | -.047 | -.037 | -.076 |
| 352. | -.726 | -.960 | -.523 | | -.312 | -.293 | -.144 | .102 | .521 | .154 | .077 | -.046 | -.036 | -.074 |
| 354. | -.668 | -.934 | -.513 | | -.309 | -.287 | -.141 | .100 | .470 | .129 | .054 | -.045 | -.035 | -.073 |
| 356. | -.577 | -.901 | -.503 | | -.303 | -.282 | -.138 | .098 | .420 | .099 | .029 | -.044 | -.035 | -.071 |
| 358. | -.481 | -.876 | -.481 | | -.298 | -.277 | -.136 | .096 | .372 | .076 | .004 | -.063 | -.043 | -.070 |

AIRFOIL PRESSURE DATA   .9 BLADE RADIUS                NASA-LANGLEY AH-1G                78/11/27.

FLT 66 RUN 22   TIME 55789.850           MU= .245   CLP= .00754   TEMP(U60)= 14.5 C  = 58.13 F

| X/C= AZIMUTH | UPPER SURFACE CP VALUES .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | LOWER SURFACE CP VALUES .02 | .10 | .20 | .50 | .70 | .90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0. | -.792 | -1.535 | -.605 | | -.399 | -.321 | -.138 | .083 | .569 | .204 | .066 | -.021 | -.016 | -.046 |
| 2. | -.705 | -1.409 | -.594 | | -.403 | -.327 | -.149 | .075 | .529 | .181 | .054 | -.029 | -.014 | -.040 |
| 4. | -.616 | -1.288 | -.594 | | -.398 | -.324 | -.151 | .076 | .473 | .149 | .033 | -.021 | -.013 | -.039 |
| 6. | -.527 | -1.205 | -.583 | | -.390 | -.318 | -.140 | .079 | .437 | .123 | .021 | -.036 | -.021 | -.038 |
| 8. | -.459 | -1.157 | -.583 | | -.393 | -.313 | -.141 | .077 | .412 | .107 | .011 | -.054 | -.030 | -.044 |
| 10. | -.416 | -1.130 | -.584 | | -.388 | -.318 | -.143 | .064 | .389 | .096 | .001 | -.054 | -.039 | -.048 |
| 12. | -.392 | -1.116 | -.584 | | -.381 | -.316 | -.147 | .062 | .376 | .094 | -.009 | -.069 | -.040 | -.047 |
| 14. | -.390 | -1.115 | -.584 | | -.384 | -.321 | -.156 | .070 | .390 | .100 | -.002 | -.062 | -.032 | -.046 |
| 16. | -.396 | -1.120 | -.585 | | -.398 | -.319 | -.151 | .077 | .410 | .116 | .008 | -.053 | -.023 | -.051 |
| 18. | -.364 | -1.126 | -.585 | | -.395 | -.324 | -.144 | .079 | .413 | .114 | .017 | -.051 | -.027 | -.054 |
| 20. | -.345 | -1.131 | -.585 | | -.397 | -.322 | -.136 | .083 | .406 | .109 | .010 | -.057 | -.029 | -.059 |
| 22. | -.307 | -1.131 | -.594 | | -.392 | -.316 | -.129 | .090 | .396 | .095 | .001 | -.064 | -.035 | -.062 |
| 24. | -.255 | -1.119 | -.648 | | -.386 | -.311 | -.127 | .092 | .371 | .079 | -.015 | -.078 | -.049 | -.061 |
| 26. | -.208 | -1.102 | -.721 | | -.380 | -.307 | -.131 | .091 | .337 | .057 | -.032 | -.079 | -.058 | -.060 |
| 28. | -.170 | -1.076 | -.785 | | -.375 | -.311 | -.133 | .094 | .304 | .041 | -.048 | -.097 | -.065 | -.059 |
| 30. | -.141 | -1.043 | -.839 | | -.377 | -.319 | -.137 | .096 | .272 | .021 | -.064 | -.106 | -.066 | -.059 |
| 32. | -.124 | -1.017 | -.890 | | -.374 | -.327 | -.140 | .095 | .245 | .012 | -.073 | -.112 | -.065 | -.058 |
| 34. | -.111 | -.993 | -.923 | | -.384 | -.334 | -.143 | .094 | .232 | .012 | -.073 | -.111 | -.059 | -.057 |
| 36. | -.124 | -.974 | -.955 | | -.390 | -.333 | -.146 | .092 | .235 | .014 | -.072 | -.110 | -.056 | -.056 |
| 38. | -.141 | -.961 | -.978 | | -.394 | -.337 | -.139 | .091 | .255 | .025 | -.059 | -.108 | -.055 | -.055 |
| 40. | -.146 | -.953 | -.992 | | -.391 | -.327 | -.132 | .094 | .268 | .035 | -.049 | -.101 | -.054 | -.055 |
| 42. | -.145 | -.952 | -1.013 | | -.393 | -.320 | -.131 | .092 | .287 | .045 | -.040 | -.099 | -.054 | -.054 |
| 44. | -.140 | -.951 | -1.020 | | -.391 | -.317 | -.129 | .088 | .293 | .053 | -.038 | -.097 | -.053 | -.054 |
| 46. | -.125 | -.950 | -1.032 | | -.393 | -.313 | -.128 | .087 | .290 | .050 | -.038 | -.096 | -.052 | -.060 |
| 48. | -.103 | -.946 | -1.024 | | -.385 | -.310 | -.126 | .090 | .284 | .042 | -.043 | -.101 | -.057 | -.069 |
| 50. | -.082 | -.932 | -1.028 | | -.378 | -.314 | -.125 | .092 | .269 | .039 | -.056 | -.106 | -.063 | -.068 |
| 52. | -.064 | -.917 | -1.020 | | -.368 | -.322 | -.128 | .091 | .257 | .031 | -.064 | -.112 | -.069 | -.060 |
| 54. | -.056 | -.909 | -1.017 | | -.363 | -.322 | -.132 | .090 | .254 | .030 | -.065 | -.112 | -.071 | -.051 |
| 56. | -.053 | -.901 | -1.016 | | -.360 | -.319 | -.130 | .090 | .252 | .030 | -.065 | -.116 | -.066 | -.057 |
| 58. | -.043 | -.889 | -1.009 | | -.363 | -.331 | -.129 | .092 | .250 | .030 | -.064 | -.117 | -.063 | -.065 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/27.

FLT 66 RUN 22 TIME 55789.850 MU= .245 CLP= .00754 TEMP(U60)= 14.5 C = 58.13 F

| | UPPER SURFACE CP VALUES | | | | | | | | | LOWER SURFACE CP VALUES | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 60. | -.036 | -.877 | -1.007 | | -.362 | -.335 | -.128 | .095 | .248 | .030 | -.064 | -.116 | -.062 | -.065 |
| 62. | -.035 | -.870 | -1.007 | | -.359 | -.332 | -.127 | .098 | .249 | .031 | -.063 | -.115 | -.062 | -.064 |
| 64. | -.035 | -.868 | -1.002 | | -.363 | -.330 | -.127 | .100 | .258 | .039 | -.063 | -.114 | -.062 | -.064 |
| 66. | -.035 | -.868 | -1.002 | | -.357 | -.321 | -.122 | .103 | .268 | .040 | -.057 | -.113 | -.065 | -.067 |
| 68. | -.032 | -.863 | -.997 | | -.352 | -.309 | -.113 | .109 | .278 | .048 | -.055 | -.113 | -.067 | -.071 |
| 70. | -.023 | -.858 | -.998 | | -.351 | -.304 | -.108 | .112 | .286 | .048 | -.055 | -.117 | -.071 | -.070 |
| 72. | -.014 | -.854 | -.994 | | -.343 | -.296 | -.103 | .114 | .282 | .046 | -.059 | -.122 | -.073 | -.070 |
| 74. | -.004 | -.847 | -.984 | | -.339 | -.285 | -.098 | .117 | .272 | .036 | -.066 | -.123 | -.073 | -.067 |
| 76. | .007 | -.838 | -.979 | | -.343 | -.274 | -.094 | .120 | .267 | .027 | -.072 | -.127 | -.076 | -.056 |
| 78. | .025 | -.832 | -.969 | | -.361 | -.263 | -.089 | .123 | .246 | .018 | -.079 | -.133 | -.079 | -.047 |
| 80. | .043 | -.821 | -.954 | | -.378 | -.253 | -.086 | .122 | .234 | .007 | -.085 | -.139 | -.078 | -.047 |
| 82. | .061 | -.810 | -.937 | | -.398 | -.242 | -.081 | .122 | .219 | -.010 | -.096 | -.144 | -.078 | -.047 |
| 84. | .078 | -.797 | -.920 | | -.421 | -.232 | -.081 | .122 | .187 | -.020 | -.105 | -.146 | -.078 | -.047 |
| 86. | .088 | -.782 | -.910 | | -.449 | -.228 | -.081 | .122 | .165 | -.037 | -.116 | -.150 | -.074 | -.047 |
| 88. | .105 | -.767 | -.902 | | -.480 | -.222 | -.077 | .121 | .143 | -.048 | -.124 | -.156 | -.072 | -.047 |
| 90. | .116 | -.743 | -.889 | | -.511 | -.218 | -.072 | .121 | .120 | -.065 | -.131 | -.158 | -.071 | -.047 |
| 92. | .132 | -.729 | -.880 | | -.537 | -.216 | -.076 | .121 | .088 | -.074 | -.138 | -.158 | -.072 | -.044 |
| 94. | .141 | -.720 | -.874 | | -.556 | -.224 | -.081 | .122 | .066 | -.084 | -.144 | -.158 | -.068 | -.040 |
| 96. | .149 | -.715 | -.868 | | -.562 | -.228 | -.081 | .119 | .044 | -.102 | -.151 | -.158 | -.065 | -.040 |
| 98. | .149 | -.714 | -.862 | | -.553 | -.229 | -.081 | .116 | .024 | -.110 | -.154 | -.154 | -.065 | -.040 |
| 100. | .151 | -.709 | -.862 | | -.529 | -.229 | -.081 | .116 | .011 | -.111 | -.158 | -.152 | -.062 | -.040 |
| 102. | .159 | -.711 | -.859 | | -.489 | -.236 | -.084 | .114 | -.010 | -.121 | -.161 | -.149 | -.059 | -.038 |
| 104. | .160 | -.714 | -.855 | | -.444 | -.241 | -.090 | .110 | -.021 | -.130 | -.162 | -.147 | -.056 | -.033 |
| 106. | .159 | -.717 | -.856 | | -.403 | -.247 | -.093 | .111 | -.032 | -.130 | -.162 | -.148 | -.054 | -.033 |
| 108. | .152 | -.720 | -.860 | | -.360 | -.258 | -.099 | .111 | -.043 | -.131 | -.159 | -.145 | -.050 | -.035 |
| 110. | .151 | -.723 | -.864 | | -.318 | -.264 | -.099 | .112 | -.054 | -.132 | -.157 | -.139 | -.048 | -.041 |
| 112. | .143 | -.727 | -.869 | | -.289 | -.271 | -.100 | .110 | -.054 | -.132 | -.158 | -.130 | -.048 | -.039 |
| 114. | .134 | -.734 | -.874 | | -.267 | -.277 | -.100 | .106 | -.054 | -.133 | -.150 | -.126 | -.045 | -.034 |
| 116. | .126 | -.745 | -.879 | | -.244 | -.279 | -.101 | .107 | -.043 | -.124 | -.142 | -.123 | -.042 | -.036 |
| 118. | .117 | -.750 | -.891 | | -.236 | -.286 | -.105 | .105 | -.031 | -.116 | -.136 | -.117 | -.039 | -.042 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/27.

FLT 66 RUN 22 TIME 55789.850 MU= .245 CLP= .00754 TEMP(U60)= 14.5 C = 58.13 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 120. | .108 | -.758 | -.900 | | -.237 | -.293 | -.111 | .102 | -.020 | -.116 | -.130 | -.116 | -.036 | -.042 |
| 122. | .098 | -.773 | -.907 | | -.244 | -.295 | -.112 | .102 | -.008 | -.098 | -.124 | -.117 | -.036 | -.042 |
| 124. | .081 | -.787 | -.920 | | -.259 | -.303 | -.113 | .101 | .003 | -.098 | -.118 | -.114 | -.036 | -.043 |
| 126. | .071 | -.796 | -.931 | | -.274 | -.311 | -.114 | .097 | .015 | -.089 | -.111 | -.104 | -.033 | -.043 |
| 128. | .061 | -.811 | -.945 | | -.285 | -.314 | -.115 | .098 | .028 | -.080 | -.110 | -.100 | -.030 | -.043 |
| 130. | .042 | -.821 | -.957 | | -.301 | -.312 | -.116 | .099 | .040 | -.071 | -.106 | -.101 | -.030 | -.044 |
| 132. | .022 | -.840 | -.967 | | -.317 | -.310 | -.117 | .098 | .065 | -.061 | -.100 | -.098 | -.031 | -.044 |
| 134. | .002 | -.859 | -.983 | | -.324 | -.313 | -.119 | .094 | .078 | -.052 | -.094 | -.092 | -.031 | -.045 |
| 136. | -.008 | -.878 | -.997 | | -.333 | -.311 | -.120 | .095 | .091 | -.052 | -.087 | -.091 | -.028 | -.045 |
| 138. | -.019 | -.897 | -1.009 | | -.346 | -.309 | -.119 | .096 | .105 | -.042 | -.081 | -.088 | -.025 | -.046 |
| 140. | -.041 | -.910 | -1.021 | | -.359 | -.313 | -.113 | .095 | .119 | -.032 | -.078 | -.082 | -.025 | -.046 |
| 142. | -.073 | -.931 | -1.012 | | -.368 | -.311 | -.115 | .091 | .134 | -.032 | -.075 | -.076 | -.025 | -.047 |
| 144. | -.085 | -.954 | -.968 | | -.368 | -.309 | -.116 | .092 | .149 | -.022 | -.068 | -.073 | -.026 | -.048 |
| 146. | -.109 | -.976 | -.894 | | -.368 | -.308 | -.118 | .094 | .164 | -.011 | -.065 | -.074 | -.026 | -.048 |
| 148. | -.132 | -.991 | -.808 | | -.374 | -.306 | -.120 | .095 | .180 | -.011 | -.062 | -.075 | -.023 | -.049 |
| 150. | -.157 | -1.015 | -.725 | | -.379 | -.304 | -.121 | .094 | .196 | -.000 | -.054 | -.077 | -.019 | -.048 |
| 152. | -.171 | -1.031 | -.654 | | -.380 | -.302 | -.120 | .090 | .200 | .001 | -.051 | -.078 | -.019 | -.041 |
| 154. | -.197 | -1.057 | -.606 | | -.375 | -.301 | -.114 | .091 | .216 | .012 | -.047 | -.075 | -.019 | -.042 |
| 156. | -.212 | -1.073 | -.579 | | -.376 | -.299 | -.116 | .090 | .220 | .013 | -.044 | -.068 | -.020 | -.042 |
| 158. | -.227 | -1.090 | -.565 | | -.382 | -.303 | -.118 | .085 | .238 | .013 | -.040 | -.065 | -.016 | -.043 |
| 160. | -.255 | -1.108 | -.560 | | -.383 | -.303 | -.120 | .085 | .242 | .024 | -.032 | -.062 | -.012 | -.044 |
| 162. | -.272 | -1.126 | -.559 | | -.379 | -.300 | -.122 | .079 | .261 | .037 | -.028 | -.055 | -.012 | -.043 |
| 164. | -.289 | -1.144 | -.559 | | -.379 | -.299 | -.124 | .081 | .266 | .039 | -.024 | -.052 | -.009 | -.035 |
| 166. | -.320 | -1.148 | -.564 | | -.381 | -.296 | -.124 | .080 | .285 | .052 | -.019 | -.048 | -.003 | -.036 |
| 168. | -.339 | -1.116 | -.568 | | -.376 | -.302 | -.117 | .074 | .291 | .054 | -.015 | -.045 | -.003 | -.036 |
| 170. | -.358 | -1.072 | -.567 | | -.376 | -.301 | -.119 | .076 | .296 | .067 | -.006 | -.041 | .000 | -.037 |
| 172. | -.392 | -1.027 | -.567 | | -.383 | -.298 | -.121 | .077 | .317 | .070 | .004 | -.037 | .006 | -.038 |
| 174. | -.413 | -.995 | -.572 | | -.385 | -.298 | -.123 | .077 | .339 | .083 | .010 | -.029 | .006 | -.038 |
| 176. | -.435 | -.986 | -.577 | | -.385 | -.294 | -.125 | .070 | .347 | .087 | .015 | -.020 | .010 | -.039 |
| 178. | -.471 | -.977 | -.576 | | -.387 | -.299 | -.128 | .071 | .354 | .101 | .021 | -.020 | .016 | -.040 |

FLT 66 RUN22

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/27.

FLT 66 RUN 22 TIME 55789.850 MU= .245 CLP= .00754 TEMP(U60)= 14.5 C = 58.13 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 180. | -.496 | -.969 | -.581 | | -.377 | -.299 | -.128 | .073 | .377 | .105 | .026 | -.021 | .016 | -.041 |
| 182. | -.534 | -.973 | -.586 | | -.369 | -.295 | -.119 | .074 | .386 | .107 | .032 | -.021 | .017 | -.041 |
| 184. | -.561 | -.977 | -.585 | | -.376 | -.300 | -.122 | .074 | .409 | .122 | .038 | -.022 | .017 | -.042 |
| 186. | -.602 | -.981 | -.591 | | -.384 | -.301 | -.124 | .066 | .420 | .127 | .045 | -.017 | .017 | -.043 |
| 188. | -.630 | -.985 | -.596 | | -.391 | -.295 | -.126 | .067 | .445 | .143 | .051 | -.012 | .018 | -.043 |
| 190. | -.689 | -.990 | -.601 | | -.394 | -.295 | -.127 | .069 | .456 | .148 | .059 | -.007 | .018 | -.032 |
| 192. | -.722 | -1.009 | -.607 | | -.393 | -.289 | -.117 | .070 | .482 | .151 | .065 | -.001 | .019 | -.032 |
| 194. | -.753 | -1.013 | -.612 | | -.395 | -.295 | -.119 | .072 | .495 | .168 | .073 | -.001 | .023 | -.033 |
| 196. | -.800 | -1.017 | -.617 | | -.388 | -.289 | -.121 | .073 | .505 | .174 | .075 | .003 | .031 | -.034 |
| 198. | -.835 | -1.020 | -.616 | | -.386 | -.269 | -.124 | .074 | .532 | .178 | .076 | .010 | .032 | -.034 |
| 200. | -.870 | -1.041 | -.620 | | -.394 | -.275 | -.126 | .074 | .546 | .181 | .083 | .006 | .032 | -.035 |
| 202. | -.905 | -1.044 | -.626 | | -.396 | -.280 | -.129 | .065 | .557 | .200 | .093 | -.002 | .033 | -.036 |
| 204. | -.942 | -1.047 | -.630 | | -.394 | -.286 | -.131 | .066 | .568 | .207 | .094 | .003 | .034 | -.036 |
| 206. | -.979 | -1.049 | -.636 | | -.401 | -.291 | -.132 | .067 | .579 | .212 | .101 | .011 | .034 | -.037 |
| 208. | -1.017 | -1.069 | -.639 | | -.404 | -.297 | -.119 | .069 | .591 | .216 | .112 | .011 | .035 | -.038 |
| 210. | -1.056 | -1.071 | -.645 | | -.400 | -.297 | -.122 | .070 | .602 | .220 | .114 | .011 | .036 | -.039 |
| 212. | -1.097 | -1.091 | -.648 | | -.408 | -.287 | -.124 | .071 | .614 | .240 | .117 | .016 | .036 | -.039 |
| 214. | -1.138 | -1.093 | -.653 | | -.410 | -.292 | -.126 | .073 | .625 | .249 | .119 | .020 | .037 | -.024 |
| 216. | -1.162 | -1.093 | -.656 | | -.405 | -.298 | -.129 | .074 | .637 | .253 | .131 | .012 | .038 | -.024 |
| 218. | -1.201 | -1.112 | -.668 | | -.413 | -.303 | -.131 | .074 | .669 | .258 | .154 | .012 | .038 | -.025 |
| 220. | -1.244 | -1.132 | -.673 | | -.414 | -.303 | -.133 | .061 | .666 | .263 | .157 | .017 | .039 | -.025 |
| 222. | -1.269 | -1.132 | -.674 | | -.408 | -.290 | -.135 | .063 | .692 | .267 | .160 | .027 | .040 | -.026 |
| 224. | -1.310 | -1.151 | -.686 | | -.415 | -.295 | -.119 | .064 | .710 | .272 | .162 | .033 | .040 | -.026 |
| 226. | -1.336 | -1.150 | -.697 | | -.422 | -.300 | -.139 | .065 | .722 | .293 | .165 | .043 | .045 | -.027 |
| 228. | -1.376 | -1.167 | -.701 | | -.429 | -.305 | -.122 | .066 | .734 | .304 | .168 | .044 | .058 | -.009 |
| 230. | -1.421 | -1.185 | -.701 | | -.431 | -.310 | -.124 | .067 | .745 | .309 | .171 | .045 | .059 | -.027 |
| 232. | -1.447 | -1.203 | -.704 | | -.422 | -.315 | -.126 | .068 | .757 | .314 | .173 | .045 | .060 | -.028 |
| 234. | -1.488 | -1.200 | -.703 | | -.434 | -.314 | -.128 | .069 | .768 | .318 | .176 | .046 | .060 | -.010 |
| 236. | -1.533 | -1.214 | -.713 | | -.450 | -.298 | -.129 | .070 | .779 | .323 | .178 | .047 | .058 | -.009 |
| 238. | -1.559 | -1.231 | -.722 | | -.435 | -.302 | -.131 | .071 | .789 | .327 | .181 | .047 | .045 | -.009 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/27.

FLT 66 RUN 22 TIME 55789.850 MU= .245 CLP= .00754 TEMP(U60)= 14.5 C = 58.13 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| AZIMUTH | | | | | | | | | | | | | | |
| 240. | -1.599 | -1.247 | -.731 | | -.424 | -.305 | -.133 | .072 | .799 | .349 | .183 | .053 | .046 | -.009 |
| 242. | -1.624 | -1.262 | -.740 | | -.429 | -.309 | -.135 | .073 | .809 | .361 | .190 | .065 | .049 | -.028 |
| 244. | -1.662 | -1.276 | -.742 | | -.434 | -.313 | -.136 | .073 | .818 | .365 | .206 | .066 | .061 | -.011 |
| 246. | -1.686 | -1.290 | -.736 | | -.439 | -.316 | -.137 | .074 | .827 | .369 | .208 | .067 | .047 | -.010 |
| 248. | -1.703 | -1.303 | -.743 | | -.443 | -.319 | -.139 | .075 | .835 | .373 | .210 | .067 | .048 | -.010 |
| 250. | -1.738 | -1.315 | -.750 | | -.447 | -.322 | -.140 | .076 | .843 | .376 | .212 | .068 | .048 | -.010 |
| 252. | -1.760 | -1.304 | -.756 | | -.451 | -.325 | -.141 | .076 | .850 | .380 | .214 | .069 | .048 | -.010 |
| 254. | -1.773 | -1.331 | -.762 | | -.455 | -.327 | -.142 | .077 | .856 | .382 | .216 | .069 | .049 | -.029 |
| 256. | -1.785 | -1.344 | -.767 | | -.458 | -.329 | -.143 | .077 | .862 | .385 | .217 | .070 | .049 | -.032 |
| 258. | -1.795 | -1.352 | -.772 | | -.460 | -.331 | -.144 | .078 | .889 | .405 | .218 | .070 | .052 | -.032 |
| 260. | -1.804 | -1.359 | -.775 | | -.463 | -.333 | -.145 | .078 | .905 | .417 | .223 | .070 | .069 | -.032 |
| 262. | -1.831 | -1.365 | -.785 | | -.464 | -.334 | -.145 | .078 | .908 | .419 | .240 | .075 | .069 | -.032 |
| 264. | -1.864 | -1.390 | -.803 | | -.466 | -.335 | -.146 | .060 | .911 | .420 | .241 | .089 | .069 | -.032 |
| 266. | -1.896 | -1.399 | -.805 | | -.467 | -.336 | -.146 | .078 | .913 | .421 | .242 | .089 | .069 | -.032 |
| 268. | -1.926 | -1.422 | -.812 | | -.468 | -.337 | -.146 | .079 | .915 | .438 | .242 | .089 | .069 | -.032 |
| 270. | -1.955 | -1.428 | -.829 | | -.468 | -.337 | -.147 | .061 | .936 | .450 | .242 | .090 | .069 | -.032 |
| 272. | -1.981 | -1.448 | -.834 | | -.468 | -.337 | -.146 | .060 | .948 | .449 | .245 | .089 | .069 | -.032 |
| 274. | -2.025 | -1.473 | -.850 | | -.467 | -.336 | -.146 | .077 | .967 | .465 | .262 | .089 | .069 | -.032 |
| 276. | -2.057 | -1.496 | -.853 | | -.466 | -.335 | -.146 | .079 | .978 | .476 | .261 | .089 | .068 | -.032 |
| 278. | -2.096 | -1.497 | -.867 | | -.467 | -.334 | -.145 | .078 | .995 | .490 | .263 | .089 | .050 | -.032 |
| 280. | -2.124 | -1.511 | -.869 | | -.486 | -.333 | -.145 | .078 | 1.005 | .500 | .279 | .089 | .050 | -.032 |
| 282. | -2.141 | -1.550 | -.886 | | -.484 | -.331 | -.144 | .078 | 1.019 | .498 | .278 | .088 | .049 | -.032 |
| 284. | -2.156 | -1.573 | -.898 | | -.481 | -.331 | -.143 | .077 | 1.027 | .495 | .276 | .088 | .049 | -.032 |
| 286. | -2.152 | -1.588 | -.896 | | -.480 | -.356 | -.142 | .077 | 1.039 | .491 | .277 | .087 | .049 | -.048 |
| 288. | -2.152 | -1.602 | -.911 | | -.497 | -.354 | -.141 | .092 | 1.045 | .502 | .292 | .086 | .049 | -.053 |
| 290. | -2.161 | -1.633 | -.925 | | -.493 | -.351 | -.140 | .094 | 1.054 | .511 | .290 | .086 | .066 | -.052 |
| 292. | -2.151 | -1.650 | -.934 | | -.491 | -.348 | -.139 | .093 | 1.059 | .506 | .287 | .085 | .066 | -.052 |
| 294. | -2.145 | -1.659 | -.924 | | -.506 | -.344 | -.138 | .092 | 1.048 | .501 | .284 | .084 | .065 | -.051 |
| 296. | -2.134 | -1.666 | -.915 | | -.501 | -.341 | -.136 | .091 | 1.037 | .482 | .280 | .083 | .064 | -.051 |
| 298. | -2.110 | -1.637 | -.909 | | -.496 | -.364 | -.153 | .090 | 1.025 | .464 | .259 | .082 | .064 | -.050 |

AIRFOIL PRESSURE DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/27.

FLT 66 RUN 22 TIME 55789.850 MU= .245 CLP= .00754 TEMP(U60)= 14.5 C = 58.13 F

| | UPPER SURFACE CP VALUES | | | | | | | | LOWER SURFACE CP VALUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X/C= AZIMUTH | .02 | .10 | .20 | .35 | .50 | .70 | .80 | .90 | .02 | .10 | .20 | .50 | .70 | .90 |
| 300. | -2.070 | -1.611 | -.897 | | -.493 | -.358 | -.154 | .099 | 1.012 | .458 | .250 | .081 | .065 | -.048 |
| 302. | -2.033 | -1.590 | -.886 | | -.508 | -.354 | -.152 | .100 | .999 | .452 | .230 | .080 | .064 | -.047 |
| 304. | -1.992 | -1.569 | -.874 | | -.501 | -.349 | -.168 | .085 | .986 | .446 | .227 | .079 | .063 | -.046 |
| 306. | -1.954 | -1.547 | -.858 | | -.494 | -.344 | -.170 | .081 | .973 | .440 | .224 | .077 | .062 | -.031 |
| 308. | -1.913 | -1.525 | -.846 | | -.484 | -.365 | -.168 | .084 | .950 | .434 | .225 | .061 | .044 | -.041 |
| 310. | -1.874 | -1.502 | -.836 | | -.477 | -.361 | -.166 | .083 | .945 | .428 | .222 | .059 | .043 | -.046 |
| 312. | -1.844 | -1.493 | -.842 | | -.489 | -.355 | -.163 | .082 | .930 | .421 | .218 | .044 | .042 | -.045 |
| 314. | -1.815 | -1.491 | -.829 | | -.464 | -.348 | -.160 | .077 | .928 | .413 | .210 | .044 | .043 | -.043 |
| 316. | -1.785 | -1.474 | -.817 | | -.476 | -.342 | -.157 | .075 | .927 | .407 | .207 | .057 | .042 | -.017 |
| 318. | -1.766 | -1.463 | -.819 | | -.487 | -.337 | -.154 | .073 | .923 | .400 | .203 | .056 | .041 | -.018 |
| 320. | -1.746 | -1.458 | -.807 | | -.479 | -.331 | -.152 | .072 | .921 | .393 | .200 | .055 | .054 | -.023 |
| 322. | -1.716 | -1.466 | -.809 | | -.470 | -.325 | -.149 | .071 | .917 | .395 | .196 | .054 | .055 | -.012 |
| 324. | -1.695 | -1.467 | -.812 | | -.462 | -.319 | -.146 | .080 | .926 | .400 | .208 | .053 | .054 | -.006 |
| 326. | -1.675 | -1.472 | -.813 | | -.453 | -.313 | -.144 | .072 | .922 | .393 | .204 | .052 | .053 | -.027 |
| 328. | -1.653 | -1.471 | -.814 | | -.461 | -.327 | -.154 | .067 | .916 | .394 | .229 | .051 | .052 | -.038 |
| 330. | -1.633 | -1.474 | -.813 | | -.470 | -.342 | -.156 | .076 | .922 | .398 | .211 | .050 | .038 | -.037 |
| 332. | -1.611 | -1.472 | -.796 | | -.462 | -.338 | -.153 | .078 | .919 | .391 | .221 | .050 | .036 | -.046 |
| 334. | -1.581 | -1.494 | -.796 | | -.451 | -.332 | -.151 | .079 | .902 | .384 | .208 | .049 | .035 | -.052 |
| 336. | -1.541 | -1.546 | -.796 | | -.457 | -.343 | -.148 | .079 | .894 | .384 | .203 | .036 | .034 | -.051 |
| 338. | -1.511 | -1.613 | -.795 | | -.449 | -.339 | -.145 | .078 | .898 | .388 | .199 | .035 | .033 | -.050 |
| 340. | -1.490 | -1.685 | -.794 | | -.441 | -.333 | -.142 | .085 | .902 | .387 | .208 | .034 | .022 | -.049 |
| 342. | -1.478 | -1.752 | -.807 | | -.432 | -.342 | -.140 | .087 | .914 | .404 | .216 | .033 | .030 | -.057 |
| 344. | -1.467 | -1.808 | -.833 | | -.450 | -.338 | -.137 | .085 | .938 | .424 | .225 | .033 | .031 | -.061 |
| 346. | -1.455 | -1.853 | -.897 | | -.457 | -.332 | -.134 | .083 | .960 | .439 | .232 | .043 | .031 | -.060 |
| 348. | -1.443 | -1.887 | -.999 | | -.463 | -.325 | -.141 | .090 | .981 | .458 | .251 | .042 | .030 | -.066 |
| 350. | -1.418 | -1.896 | -1.031 | | -.455 | -.333 | -.134 | .099 | .973 | .449 | .248 | .042 | .029 | -.070 |
| 352. | -1.348 | -1.882 | -1.012 | | -.446 | -.330 | -.127 | .108 | .902 | .403 | .222 | .031 | .020 | -.069 |
| 354. | -1.239 | -1.845 | -.945 | | -.438 | -.323 | -.124 | .124 | .809 | .348 | .185 | .011 | .009 | -.068 |
| 356. | -1.130 | -1.802 | -.841 | | -.420 | -.317 | -.121 | .120 | .733 | .300 | .136 | -.000 | -.001 | -.066 |
| 358. | -1.045 | -1.768 | -.741 | | -.408 | -.324 | -.127 | .102 | .689 | .274 | .111 | -.019 | -.012 | -.051 |

## APPENDIX E. - AIRFOIL COEFFICIENT DATA

The listings of airfoil coefficent data are presented as reduced copies of two-page computer listings. The top of each page segment contains identification as to flight number, run number, and time. The ratio of Reynolds number per unit Mach number is identified as RN/M; blade azimuth is listed in degrees. CN, CC, and CM identify columns of normal-force, chordwise-force, and pitching-moment coefficients, respectively.

The data of Table VI serves as a guide to this set of listings.

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/10/12.

FLT 61 RUN 26B TIME 55556.200 RN/M= 16.37 MILLION ROTOR SPEED= 34.0205 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .251 | -.003 | -.003 | .623 | 60.0 | .251 | -.003 | -.000 | .623 | 120.0 | .355 | -.012 | .011 | .623 |
| 2.0 | .245 | -.003 | -.002 | .623 | 62.0 | .251 | -.003 | -.000 | .623 | 122.0 | .359 | -.013 | .011 | .623 |
| 4.0 | .239 | -.002 | -.001 | .623 | 64.0 | .252 | -.003 | -.000 | .623 | 124.0 | .360 | -.013 | .011 | .623 |
| 6.0 | .234 | -.002 | -.001 | .623 | 66.0 | .254 | -.004 | -.000 | .623 | 126.0 | .362 | -.013 | .012 | .623 |
| 8.0 | .231 | -.002 | -.002 | .623 | 68.0 | .258 | -.004 | .001 | .623 | 128.0 | .364 | -.014 | .012 | .623 |
| 10.0 | .228 | -.002 | -.002 | .623 | 70.0 | .258 | -.004 | .001 | .623 | 130.0 | .364 | -.014 | .012 | .623 |
| 12.0 | .232 | -.002 | -.003 | .623 | 72.0 | .259 | -.004 | .001 | .623 | 132.0 | .365 | -.014 | .012 | .623 |
| 14.0 | .232 | -.002 | -.003 | .623 | 74.0 | .261 | -.004 | .001 | .623 | 134.0 | .370 | -.014 | .012 | .623 |
| 16.0 | .231 | -.001 | -.003 | .623 | 76.0 | .264 | -.004 | .001 | .623 | 136.0 | .372 | -.015 | .012 | .623 |
| 18.0 | .228 | -.002 | -.002 | .623 | 78.0 | .268 | -.004 | .002 | .623 | 138.0 | .373 | -.015 | .012 | .623 |
| 20.0 | .227 | -.002 | -.002 | .623 | 80.0 | .268 | -.005 | .002 | .623 | 140.0 | .375 | -.015 | .012 | .623 |
| 22.0 | .231 | -.002 | -.003 | .623 | 82.0 | .270 | -.005 | .002 | .623 | 142.0 | .376 | -.015 | .011 | .623 |
| 24.0 | .230 | -.002 | -.002 | .623 | 84.0 | .276 | -.005 | .002 | .623 | 144.0 | .371 | -.015 | .012 | .623 |
| 26.0 | .230 | -.002 | -.002 | .623 | 86.0 | .280 | -.005 | .002 | .623 | 146.0 | .370 | -.015 | .013 | .623 |
| 28.0 | .231 | -.001 | -.003 | .623 | 88.0 | .281 | -.005 | .003 | .623 | 148.0 | .369 | -.015 | .013 | .623 |
| 30.0 | .231 | -.002 | -.002 | .623 | 90.0 | .287 | -.006 | .004 | .623 | 150.0 | .370 | -.015 | .013 | .623 |
| 32.0 | .231 | -.002 | -.002 | .623 | 92.0 | .290 | -.006 | .005 | .623 | 152.0 | .373 | -.015 | .012 | .623 |
| 34.0 | .231 | -.002 | -.002 | .623 | 94.0 | .296 | -.006 | .006 | .623 | 154.0 | .372 | -.015 | .012 | .623 |
| 36.0 | .232 | -.002 | -.002 | .623 | 96.0 | .299 | -.007 | .006 | .623 | 156.0 | .366 | -.015 | .013 | .623 |
| 38.0 | .232 | -.002 | -.003 | .623 | 98.0 | .300 | -.007 | .007 | .623 | 158.0 | .366 | -.015 | .013 | .623 |
| 40.0 | .232 | -.002 | -.003 | .623 | 100.0 | .307 | -.008 | .007 | .623 | 160.0 | .370 | -.015 | .012 | .623 |
| 42.0 | .234 | -.002 | -.002 | .623 | 102.0 | .312 | -.008 | .009 | .623 | 162.0 | .370 | -.015 | .012 | .623 |
| 44.0 | .238 | -.002 | -.003 | .623 | 104.0 | .323 | -.009 | .007 | .623 | 164.0 | .367 | -.015 | .013 | .623 |
| 46.0 | .240 | -.002 | -.003 | .623 | 106.0 | .328 | -.009 | .008 | .623 | 166.0 | .367 | -.015 | .013 | .623 |
| 48.0 | .238 | -.002 | -.003 | .623 | 108.0 | .336 | -.010 | .008 | .623 | 168.0 | .367 | -.015 | .013 | .623 |
| 50.0 | .242 | -.002 | -.002 | .623 | 110.0 | .337 | -.011 | .010 | .623 | 170.0 | .367 | -.015 | .013 | .623 |
| 52.0 | .244 | -.002 | -.002 | .623 | 112.0 | .343 | -.011 | .010 | .623 | 172.0 | .369 | -.016 | .013 | .623 |
| 54.0 | .251 | -.003 | -.002 | .623 | 114.0 | .346 | -.012 | .010 | .623 | 174.0 | .370 | -.016 | .013 | .623 |
| 56.0 | .251 | -.003 | -.002 | .623 | 116.0 | .347 | -.012 | .011 | .623 | 176.0 | .372 | -.016 | .013 | .623 |
| 58.0 | .250 | -.003 | -.001 | .623 | 118.0 | .350 | -.012 | .011 | .623 | 178.0 | .375 | -.016 | .012 | .623 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/10/12.

FLT 61 RUN 26B TIME 55556.200 RN/M= 16.37 MILLION ROTOR SPEED= 34.0205 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .376 | -.016 | .012 | .623 | 240.0 | .377 | -.015 | .011 | .623 | 300.0 | .292 | -.006 | .000 | .623 |
| 182.0 | .378 | -.016 | .012 | .623 | 242.0 | .370 | -.015 | .011 | .623 | 302.0 | .292 | -.006 | -.001 | .623 |
| 184.0 | .381 | -.016 | .012 | .623 | 244.0 | .363 | -.014 | .009 | .623 | 304.0 | .286 | -.006 | -.000 | .623 |
| 186.0 | .383 | -.016 | .012 | .623 | 246.0 | .359 | -.014 | .009 | .623 | 306.0 | .286 | -.006 | .000 | .623 |
| 188.0 | .384 | -.016 | .012 | .623 | 248.0 | .356 | -.013 | .007 | .623 | 308.0 | .286 | -.005 | .001 | .623 |
| 190.0 | .387 | -.016 | .012 | .623 | 250.0 | .355 | -.012 | .007 | .623 | 310.0 | .288 | -.005 | .000 | .623 |
| 192.0 | .385 | -.017 | .012 | .623 | 252.0 | .352 | -.012 | .006 | .623 | 312.0 | .289 | -.005 | .000 | .623 |
| 194.0 | .387 | -.016 | .012 | .623 | 254.0 | .349 | -.011 | .006 | .623 | 314.0 | .284 | -.006 | .001 | .623 |
| 196.0 | .388 | -.016 | .012 | .623 | 256.0 | .339 | -.010 | .006 | .623 | 316.0 | .281 | -.005 | .001 | .623 |
| 198.0 | .389 | -.016 | .012 | .623 | 258.0 | .333 | -.010 | .006 | .623 | 318.0 | .278 | -.005 | .001 | .623 |
| 200.0 | .398 | -.017 | .011 | .623 | 260.0 | .328 | -.010 | .006 | .623 | 320.0 | .274 | -.005 | .000 | .623 |
| 202.0 | .402 | -.017 | .011 | .623 | 262.0 | .325 | -.009 | .005 | .623 | 322.0 | .276 | -.005 | -.001 | .623 |
| 204.0 | .401 | -.017 | .011 | .623 | 264.0 | .325 | -.009 | .004 | .623 | 324.0 | .275 | -.005 | -.001 | .623 |
| 206.0 | .398 | -.017 | .011 | .623 | 266.0 | .323 | -.008 | .004 | .623 | 326.0 | .273 | -.004 | -.002 | .623 |
| 208.0 | .398 | -.017 | .011 | .623 | 268.0 | .316 | -.008 | .003 | .623 | 328.0 | .273 | -.004 | -.002 | .623 |
| 210.0 | .402 | -.017 | .011 | .623 | 270.0 | .311 | -.008 | .004 | .623 | 330.0 | .271 | -.004 | -.002 | .623 |
| 212.0 | .402 | -.018 | .011 | .623 | 272.0 | .310 | -.008 | .004 | .623 | 332.0 | .270 | -.004 | -.002 | .623 |
| 214.0 | .403 | -.018 | .012 | .623 | 274.0 | .307 | -.008 | .003 | .623 | 334.0 | .266 | -.004 | -.002 | .623 |
| 216.0 | .402 | -.018 | .012 | .623 | 276.0 | .304 | -.007 | .003 | .623 | 336.0 | .265 | -.004 | -.001 | .623 |
| 218.0 | .398 | -.018 | .013 | .623 | 278.0 | .301 | -.007 | .003 | .623 | 338.0 | .264 | -.004 | -.001 | .623 |
| 220.0 | .401 | -.017 | .012 | .623 | 280.0 | .299 | -.006 | .002 | .623 | 340.0 | .260 | -.003 | .000 | .623 |
| 222.0 | .393 | -.018 | .013 | .623 | 282.0 | .298 | -.006 | .002 | .623 | 342.0 | .259 | -.004 | .000 | .623 |
| 224.0 | .391 | -.018 | .012 | .623 | 284.0 | .298 | -.006 | .001 | .623 | 344.0 | .261 | -.004 | -.001 | .623 |
| 226.0 | .390 | -.018 | .013 | .623 | 286.0 | .297 | -.006 | .001 | .623 | 346.0 | .260 | -.004 | -.002 | .623 |
| 228.0 | .387 | -.017 | .013 | .623 | 288.0 | .294 | -.006 | .001 | .623 | 348.0 | .256 | -.004 | -.001 | .623 |
| 230.0 | .388 | -.017 | .013 | .623 | 290.0 | .293 | -.005 | .001 | .623 | 350.0 | .251 | -.003 | -.001 | .623 |
| 232.0 | .387 | -.016 | .012 | .623 | 292.0 | .288 | -.006 | .003 | .623 | 352.0 | .247 | -.003 | -.001 | .623 |
| 234.0 | .384 | -.016 | .012 | .623 | 294.0 | .290 | -.005 | .002 | .623 | 354.0 | .245 | -.003 | -.001 | .623 |
| 236.0 | .383 | -.016 | .012 | .623 | 296.0 | .289 | -.006 | .001 | .623 | 356.0 | .242 | -.003 | -.002 | .623 |
| 238.0 | .380 | -.016 | .011 | .623 | 298.0 | .291 | -.006 | .002 | .623 | 358.0 | .237 | -.002 | -.003 | .623 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 1 TIME 53718.300 RN/M= 16.81 MILLION ROTOR SPEED= 34.1966 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .276 | -.001 | -.011 | .633 | 60.0 | .153 | .004 | -.018 | .725 | 120.0 | .171 | .002 | -.016 | .725 |
| 2.0 | .274 | -.001 | -.013 | .637 | 62.0 | .151 | .004 | -.015 | .727 | 122.0 | .161 | .002 | -.015 | .724 |
| 4.0 | .260 | -.001 | -.011 | .641 | 64.0 | .152 | .003 | -.014 | .729 | 124.0 | .159 | .002 | -.015 | .722 |
| 6.0 | .248 | -.000 | -.009 | .644 | 66.0 | .149 | .003 | -.014 | .731 | 126.0 | .160 | .002 | -.016 | .719 |
| 8.0 | .237 | .000 | -.009 | .648 | 68.0 | .149 | .003 | -.016 | .732 | 128.0 | .161 | .002 | -.019 | .717 |
| 10.0 | .230 | .001 | -.010 | .652 | 70.0 | .148 | .003 | -.016 | .733 | 130.0 | .162 | .002 | -.019 | .715 |
| 12.0 | .222 | .001 | -.010 | .655 | 72.0 | .155 | .004 | -.018 | .735 | 132.0 | .162 | .002 | -.020 | .712 |
| 14.0 | .215 | .001 | -.010 | .659 | 74.0 | .166 | .004 | -.018 | .736 | 134.0 | .158 | .002 | -.019 | .710 |
| 16.0 | .210 | .001 | -.011 | .663 | 76.0 | .179 | .004 | -.016 | .737 | 136.0 | .155 | .002 | -.018 | .707 |
| 18.0 | .205 | .002 | -.011 | .666 | 78.0 | .191 | .004 | -.015 | .737 | 138.0 | .153 | .002 | -.018 | .705 |
| 20.0 | .200 | .002 | -.012 | .670 | 80.0 | .204 | .003 | -.014 | .738 | 140.0 | .157 | .003 | -.019 | .702 |
| 22.0 | .193 | .002 | -.013 | .673 | 82.0 | .210 | .002 | -.012 | .739 | 142.0 | .157 | .003 | -.018 | .699 |
| 24.0 | .185 | .002 | -.013 | .677 | 84.0 | .208 | .001 | -.010 | .739 | 144.0 | .157 | .003 | -.019 | .696 |
| 26.0 | .179 | .002 | -.012 | .680 | 86.0 | .202 | .001 | -.007 | .739 | 146.0 | .160 | .003 | -.019 | .693 |
| 28.0 | .171 | .003 | -.012 | .683 | 88.0 | .206 | .000 | -.008 | .740 | 148.0 | .160 | .003 | -.019 | .690 |
| 30.0 | .162 | .003 | -.011 | .686 | 90.0 | .204 | -.000 | -.008 | .740 | 150.0 | .163 | .003 | -.019 | .687 |
| 32.0 | .161 | .003 | -.013 | .690 | 92.0 | .206 | -.001 | -.009 | .740 | 152.0 | .165 | .003 | -.020 | .683 |
| 34.0 | .158 | .003 | -.014 | .693 | 94.0 | .203 | -.000 | -.009 | .739 | 154.0 | .160 | .003 | -.018 | .680 |
| 36.0 | .149 | .003 | -.013 | .696 | 96.0 | .200 | -.000 | -.009 | .739 | 156.0 | .160 | .003 | -.017 | .677 |
| 38.0 | .144 | .003 | -.013 | .699 | 98.0 | .198 | -.000 | -.010 | .739 | 158.0 | .167 | .003 | -.018 | .673 |
| 40.0 | .145 | .003 | -.015 | .702 | 100.0 | .197 | -.001 | -.011 | .738 | 160.0 | .171 | .003 | -.019 | .670 |
| 42.0 | .140 | .003 | -.015 | .704 | 102.0 | .193 | -.001 | -.012 | .737 | 162.0 | .172 | .003 | -.020 | .666 |
| 44.0 | .136 | .003 | -.015 | .707 | 104.0 | .190 | -.000 | -.012 | .737 | 164.0 | .173 | .003 | -.018 | .663 |
| 46.0 | .132 | .004 | -.015 | .710 | 106.0 | .189 | -.000 | -.013 | .736 | 166.0 | .173 | .003 | -.018 | .659 |
| 48.0 | .131 | .004 | -.017 | .712 | 108.0 | .188 | -.000 | -.014 | .735 | 168.0 | .176 | .003 | -.018 | .655 |
| 50.0 | .118 | .004 | -.017 | .715 | 110.0 | .184 | .000 | -.014 | .733 | 170.0 | .181 | .003 | -.018 | .652 |
| 52.0 | .106 | .004 | -.017 | .717 | 112.0 | .181 | .001 | -.014 | .732 | 172.0 | .183 | .003 | -.019 | .648 |
| 54.0 | .107 | .004 | -.020 | .719 | 114.0 | .179 | .001 | -.014 | .731 | 174.0 | .188 | .003 | -.020 | .644 |
| 56.0 | .110 | .004 | -.020 | .722 | 116.0 | .177 | .001 | -.015 | .729 | 176.0 | .186 | .003 | -.020 | .641 |
| 58.0 | .131 | .004 | -.020 | .724 | 118.0 | .174 | .001 | -.015 | .727 | 178.0 | .190 | .003 | -.021 | .637 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 1 TIME 53718.300 RN/M= 16.81 MILLION ROTOR SPEED= 34.1966 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .194 | .002 | -.020 | .633 | 240.0 | .452 | -.012 | -.012 | .541 | 300.0 | .363 | -.007 | -.007 | .541 |
| 182.0 | .199 | .002 | -.019 | .630 | 242.0 | .467 | -.014 | -.012 | .539 | 302.0 | .364 | -.007 | -.009 | .543 |
| 184.0 | .206 | .002 | -.021 | .626 | 244.0 | .477 | -.015 | -.012 | .538 | 304.0 | .360 | -.007 | -.008 | .545 |
| 186.0 | .215 | .002 | -.021 | .622 | 246.0 | .494 | -.016 | -.012 | .536 | 306.0 | .358 | -.007 | -.008 | .547 |
| 188.0 | .220 | .002 | -.021 | .618 | 248.0 | .500 | -.018 | -.011 | .535 | 308.0 | .354 | -.007 | -.006 | .549 |
| 190.0 | .222 | .002 | -.021 | .615 | 250.0 | .511 | -.019 | -.010 | .533 | 310.0 | .356 | -.007 | -.005 | .552 |
| 192.0 | .234 | .002 | -.021 | .611 | 252.0 | .528 | -.021 | -.008 | .532 | 312.0 | .364 | -.008 | -.007 | .554 |
| 194.0 | .238 | .002 | -.020 | .608 | 254.0 | .539 | -.023 | -.007 | .531 | 314.0 | .362 | -.008 | -.006 | .557 |
| 196.0 | .248 | .001 | -.021 | .604 | 256.0 | .550 | -.025 | -.006 | .530 | 316.0 | .363 | -.008 | -.005 | .559 |
| 198.0 | .255 | .001 | -.021 | .600 | 258.0 | .570 | -.026 | -.006 | .529 | 318.0 | .371 | -.008 | -.005 | .562 |
| 200.0 | .261 | .001 | -.021 | .597 | 260.0 | .589 | -.029 | -.005 | .528 | 320.0 | .373 | -.008 | -.006 | .565 |
| 202.0 | .269 | .001 | -.021 | .593 | 262.0 | .600 | -.031 | -.003 | .528 | 322.0 | .379 | -.008 | -.008 | .568 |
| 204.0 | .274 | .001 | -.021 | .590 | 264.0 | .602 | -.034 | .000 | .527 | 324.0 | .379 | -.009 | -.009 | .571 |
| 206.0 | .289 | .000 | -.021 | .587 | 266.0 | .602 | -.034 | .003 | .527 | 326.0 | .380 | -.009 | -.009 | .574 |
| 208.0 | .292 | -.001 | -.020 | .583 | 268.0 | .586 | -.032 | .002 | .527 | 328.0 | .376 | -.008 | -.007 | .577 |
| 210.0 | .299 | -.001 | -.019 | .580 | 270.0 | .540 | -.028 | .001 | .527 | 330.0 | .373 | -.008 | -.008 | .580 |
| 212.0 | .306 | -.001 | -.018 | .577 | 272.0 | .470 | -.022 | -.001 | .527 | 332.0 | .373 | -.008 | -.007 | .583 |
| 214.0 | .319 | -.002 | -.019 | .574 | 274.0 | .426 | -.016 | -.004 | .527 | 334.0 | .373 | -.008 | -.007 | .586 |
| 216.0 | .326 | -.002 | -.019 | .571 | 276.0 | .379 | -.012 | -.004 | .527 | 336.0 | .371 | -.008 | -.007 | .590 |
| 218.0 | .333 | -.003 | -.019 | .568 | 278.0 | .362 | -.009 | -.007 | .528 | 338.0 | .365 | -.008 | -.006 | .593 |
| 220.0 | .340 | -.004 | -.017 | .565 | 280.0 | .363 | -.007 | -.011 | .528 | 340.0 | .360 | -.008 | -.005 | .597 |
| 222.0 | .352 | -.004 | -.017 | .562 | 282.0 | .356 | -.007 | -.013 | .529 | 342.0 | .358 | -.007 | -.005 | .600 |
| 224.0 | .359 | -.005 | -.014 | .559 | 284.0 | .357 | -.007 | -.014 | .530 | 344.0 | .352 | -.007 | -.006 | .604 |
| 226.0 | .380 | -.006 | -.015 | .557 | 286.0 | .368 | -.007 | -.017 | .531 | 346.0 | .339 | -.006 | -.006 | .607 |
| 228.0 | .389 | -.007 | -.015 | .554 | 288.0 | .368 | -.007 | -.013 | .532 | 348.0 | .331 | -.005 | -.005 | .611 |
| 230.0 | .402 | -.008 | -.015 | .552 | 290.0 | .365 | -.008 | -.011 | .533 | 350.0 | .328 | -.005 | -.007 | .615 |
| 232.0 | .411 | -.009 | -.014 | .549 | 292.0 | .370 | -.007 | -.010 | .534 | 352.0 | .313 | -.004 | -.007 | .618 |
| 234.0 | .417 | -.009 | -.013 | .547 | 294.0 | .367 | -.007 | -.007 | .536 | 354.0 | .305 | -.003 | -.008 | .622 |
| 236.0 | .435 | -.011 | -.013 | .545 | 296.0 | .362 | -.007 | -.007 | .537 | 356.0 | .296 | -.002 | -.010 | .626 |
| 238.0 | .443 | -.011 | -.013 | .543 | 298.0 | .366 | -.007 | -.011 | .539 | 358.0 | .286 | -.002 | -.011 | .629 |

FLT 63 RUN1

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 6 TIME 54157.800 RN/M= 16.81 MILLION ROTOR SPEED= 34.0290 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .321 | -.006 | -.003 | .630 | 60.0 | .191 | .005 | -.012 | .786 | 120.0 | .020 | .001 | -.034 | .786 |
| 2.0 | .319 | -.005 | -.004 | .636 | 62.0 | .191 | .005 | -.012 | .789 | 122.0 | .014 | .001 | -.033 | .783 |
| 4.0 | .315 | -.005 | -.006 | .643 | 64.0 | .189 | .005 | -.013 | .792 | 124.0 | .009 | .001 | -.033 | .780 |
| 6.0 | .305 | -.004 | -.006 | .649 | 66.0 | .188 | .005 | -.013 | .795 | 126.0 | .016 | .001 | -.035 | .776 |
| 8.0 | .293 | -.003 | -.005 | .655 | 68.0 | .191 | .005 | -.014 | .797 | 128.0 | .016 | .001 | -.034 | .772 |
| 10.0 | .280 | -.003 | -.005 | .661 | 70.0 | .194 | .006 | -.014 | .799 | 130.0 | .022 | .002 | -.034 | .768 |
| 12.0 | .269 | -.002 | -.004 | .668 | 72.0 | .190 | .006 | -.014 | .801 | 132.0 | .028 | .003 | -.033 | .764 |
| 14.0 | .265 | -.002 | -.005 | .674 | 74.0 | .188 | .006 | -.014 | .803 | 134.0 | .034 | .003 | -.034 | .760 |
| 16.0 | .260 | -.002 | -.004 | .680 | 76.0 | .181 | .006 | -.014 | .805 | 136.0 | .037 | .004 | -.035 | .755 |
| 18.0 | .255 | -.001 | -.005 | .686 | 78.0 | .173 | .006 | -.015 | .806 | 138.0 | .047 | .004 | -.036 | .751 |
| 20.0 | .246 | -.001 | -.005 | .692 | 80.0 | .164 | .006 | -.015 | .808 | 140.0 | .049 | .004 | -.034 | .746 |
| 22.0 | .238 | -.001 | -.005 | .698 | 82.0 | .153 | .006 | -.016 | .809 | 142.0 | .057 | .004 | -.035 | .741 |
| 24.0 | .226 | .000 | -.005 | .703 | 84.0 | .141 | .006 | -.017 | .809 | 144.0 | .060 | .004 | -.033 | .736 |
| 26.0 | .220 | -.000 | -.005 | .709 | 86.0 | .134 | .005 | -.020 | .810 | 146.0 | .064 | .004 | -.033 | .731 |
| 28.0 | .211 | .000 | -.005 | .715 | 88.0 | .127 | .005 | -.020 | .810 | 148.0 | .062 | .004 | -.031 | .726 |
| 30.0 | .207 | .000 | -.005 | .720 | 90.0 | .118 | .005 | -.021 | .810 | 150.0 | .068 | .004 | -.030 | .720 |
| 32.0 | .201 | .001 | -.005 | .726 | 92.0 | .111 | .005 | -.022 | .810 | 152.0 | .077 | .004 | -.031 | .715 |
| 34.0 | .197 | .002 | -.007 | .731 | 94.0 | .104 | .004 | -.023 | .810 | 154.0 | .083 | .004 | -.031 | .709 |
| 36.0 | .192 | .002 | -.008 | .736 | 96.0 | .101 | .004 | -.024 | .809 | 156.0 | .092 | .004 | -.030 | .703 |
| 38.0 | .186 | .002 | -.008 | .741 | 98.0 | .098 | .004 | -.025 | .809 | 158.0 | .101 | .004 | -.031 | .698 |
| 40.0 | .183 | .002 | -.009 | .746 | 100.0 | .091 | .004 | -.026 | .808 | 160.0 | .114 | .004 | -.031 | .692 |
| 42.0 | .181 | .003 | -.010 | .751 | 102.0 | .087 | .003 | -.027 | .806 | 162.0 | .123 | .004 | -.030 | .686 |
| 44.0 | .175 | .003 | -.010 | .755 | 104.0 | .077 | .003 | -.028 | .805 | 164.0 | .134 | .004 | -.030 | .680 |
| 46.0 | .169 | .004 | -.010 | .760 | 106.0 | .059 | .003 | -.029 | .803 | 166.0 | .145 | .004 | -.030 | .674 |
| 48.0 | .172 | .004 | -.010 | .764 | 108.0 | .041 | .003 | -.030 | .801 | 168.0 | .155 | .004 | -.030 | .668 |
| 50.0 | .179 | .004 | -.011 | .768 | 110.0 | .030 | .003 | -.030 | .799 | 170.0 | .169 | .004 | -.031 | .662 |
| 52.0 | .185 | .005 | -.011 | .772 | 112.0 | .028 | .002 | -.031 | .797 | 172.0 | .180 | .004 | -.030 | .655 |
| 54.0 | .183 | .005 | -.011 | .776 | 114.0 | .019 | .002 | -.031 | .795 | 174.0 | .196 | .004 | -.030 | .649 |
| 56.0 | .191 | .005 | -.014 | .779 | 116.0 | .020 | .002 | -.032 | .792 | 176.0 | .211 | .003 | -.030 | .643 |
| 58.0 | .192 | .005 | -.012 | .783 | 118.0 | .022 | .002 | -.033 | .789 | 178.0 | .225 | .003 | -.029 | .637 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 6 TIME 54157.800 RN/M= 16.81 MILLION ROTOR SPEED= 34.0290 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .243 | .003 | -.030 | .630 | 240.0 | .648 | -.039 | -.003 | .474 | 300.0 | .534 | -.028 | -.000 | .474 |
| 182.0 | .264 | .002 | -.030 | .624 | 242.0 | .656 | -.040 | -.003 | .471 | 302.0 | .517 | -.026 | -.001 | .477 |
| 184.0 | .280 | .002 | -.029 | .618 | 244.0 | .661 | -.041 | -.004 | .468 | 304.0 | .499 | -.024 | -.001 | .481 |
| 186.0 | .297 | .001 | -.027 | .611 | 246.0 | .669 | -.042 | -.004 | .466 | 306.0 | .477 | -.022 | .000 | .484 |
| 188.0 | .315 | .000 | -.027 | .605 | 248.0 | .665 | -.042 | -.001 | .463 | 308.0 | .469 | -.020 | -.002 | .488 |
| 190.0 | .333 | -.001 | -.027 | .599 | 250.0 | .653 | -.042 | .001 | .461 | 310.0 | .453 | -.018 | -.004 | .492 |
| 192.0 | .350 | -.002 | -.026 | .593 | 252.0 | .662 | -.043 | -.000 | .459 | 312.0 | .450 | -.017 | -.007 | .496 |
| 194.0 | .367 | -.003 | -.025 | .587 | 254.0 | .657 | -.044 | .001 | .457 | 314.0 | .439 | -.015 | -.007 | .500 |
| 196.0 | .380 | -.004 | -.023 | .581 | 256.0 | .659 | -.043 | .001 | .455 | 316.0 | .426 | -.014 | -.007 | .505 |
| 198.0 | .396 | -.006 | -.021 | .575 | 258.0 | .649 | -.042 | .002 | .454 | 318.0 | .421 | -.013 | -.007 | .509 |
| 200.0 | .408 | -.007 | -.021 | .569 | 260.0 | .657 | -.042 | -.002 | .453 | 320.0 | .422 | -.013 | -.008 | .514 |
| 202.0 | .435 | -.009 | -.020 | .563 | 262.0 | .647 | -.042 | -.001 | .452 | 322.0 | .411 | -.012 | -.008 | .519 |
| 204.0 | .452 | -.010 | -.020 | .557 | 264.0 | .656 | -.042 | -.002 | .451 | 324.0 | .403 | -.012 | -.007 | .524 |
| 206.0 | .462 | -.012 | -.018 | .551 | 266.0 | .651 | -.042 | -.001 | .450 | 326.0 | .400 | -.011 | -.008 | .529 |
| 208.0 | .480 | -.014 | -.017 | .546 | 268.0 | .657 | -.041 | -.002 | .450 | 328.0 | .400 | -.011 | -.008 | .534 |
| 210.0 | .497 | -.016 | -.016 | .540 | 270.0 | .648 | -.041 | -.002 | .450 | 330.0 | .395 | -.011 | -.007 | .540 |
| 212.0 | .514 | -.018 | -.015 | .535 | 272.0 | .645 | -.040 | -.003 | .450 | 332.0 | .391 | -.010 | -.007 | .545 |
| 214.0 | .524 | -.020 | -.013 | .529 | 274.0 | .643 | -.041 | -.001 | .450 | 334.0 | .390 | -.010 | -.007 | .551 |
| 216.0 | .541 | -.022 | -.013 | .524 | 276.0 | .636 | -.039 | -.001 | .451 | 336.0 | .384 | -.010 | -.004 | .557 |
| 218.0 | .556 | -.023 | -.012 | .519 | 278.0 | .630 | -.040 | -.001 | .452 | 338.0 | .384 | -.010 | -.005 | .562 |
| 220.0 | .562 | -.025 | -.010 | .514 | 280.0 | .627 | -.039 | -.001 | .453 | 340.0 | .378 | -.010 | -.004 | .568 |
| 222.0 | .572 | -.027 | -.009 | .510 | 282.0 | .620 | -.037 | -.002 | .454 | 342.0 | .383 | -.010 | -.005 | .574 |
| 224.0 | .585 | -.028 | -.010 | .505 | 284.0 | .615 | -.036 | -.001 | .455 | 344.0 | .385 | -.009 | -.005 | .580 |
| 226.0 | .599 | -.032 | -.009 | .501 | 286.0 | .611 | -.036 | -.000 | .457 | 346.0 | .378 | -.009 | -.005 | .586 |
| 228.0 | .604 | -.032 | -.006 | .496 | 288.0 | .610 | -.035 | -.001 | .459 | 348.0 | .369 | -.009 | -.005 | .592 |
| 230.0 | .610 | -.033 | -.005 | .492 | 290.0 | .598 | -.034 | -.001 | .461 | 350.0 | .362 | -.009 | -.003 | .599 |
| 232.0 | .623 | -.035 | -.004 | .488 | 292.0 | .584 | -.033 | .001 | .463 | 352.0 | .361 | -.008 | -.005 | .605 |
| 234.0 | .628 | -.036 | -.003 | .484 | 294.0 | .576 | -.033 | .002 | .465 | 354.0 | .352 | -.008 | -.004 | .611 |
| 236.0 | .630 | -.038 | -.002 | .481 | 296.0 | .562 | -.031 | .002 | .468 | 356.0 | .341 | -.007 | -.005 | .617 |
| 238.0 | .640 | -.039 | -.003 | .477 | 298.0 | .549 | -.030 | .001 | .471 | 358.0 | .334 | -.007 | -.004 | .624 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 9 TIME 54467.200 RN/M= 16.81 MILLION ROTOR SPEED= 34.0810 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .401 | -.012 | -.003 | .631 | 60.0 | .202 | .009 | -.011 | .831 | 120.0 | -.067 | -.004 | -.056 | .831 |
| 2.0 | .381 | -.011 | -.002 | .639 | 62.0 | .202 | .009 | -.013 | .835 | 122.0 | -.086 | -.005 | -.054 | .827 |
| 4.0 | .364 | -.010 | -.003 | .647 | 64.0 | .200 | .009 | -.014 | .839 | 124.0 | -.101 | -.006 | -.052 | .823 |
| 6.0 | .352 | -.008 | -.004 | .655 | 66.0 | .201 | .009 | -.014 | .842 | 126.0 | -.108 | -.007 | -.052 | .818 |
| 8.0 | .340 | -.007 | -.005 | .663 | 68.0 | .200 | .009 | -.015 | .845 | 128.0 | -.112 | -.007 | -.052 | .813 |
| 10.0 | .330 | -.006 | -.003 | .671 | 70.0 | .193 | .009 | -.015 | .848 | 130.0 | -.111 | -.008 | -.053 | .808 |
| 12.0 | .309 | -.005 | -.002 | .679 | 72.0 | .187 | .009 | -.015 | .851 | 132.0 | -.107 | -.009 | -.053 | .803 |
| 14.0 | .300 | -.005 | -.004 | .687 | 74.0 | .177 | .009 | -.016 | .853 | 134.0 | -.086 | -.008 | -.054 | .797 |
| 16.0 | .298 | -.004 | -.005 | .695 | 76.0 | .161 | .008 | -.016 | .855 | 136.0 | -.051 | -.008 | -.054 | .792 |
| 18.0 | .289 | -.003 | -.005 | .702 | 78.0 | .144 | .008 | -.016 | .857 | 138.0 | -.028 | -.007 | -.054 | .786 |
| 20.0 | .285 | -.002 | -.005 | .710 | 80.0 | .127 | .007 | -.017 | .859 | 140.0 | -.019 | -.007 | -.053 | .780 |
| 22.0 | .269 | -.001 | -.003 | .718 | 82.0 | .116 | .007 | -.019 | .860 | 142.0 | -.009 | -.005 | -.050 | .773 |
| 24.0 | .261 | -.001 | -.003 | .725 | 84.0 | .100 | .006 | -.020 | .861 | 144.0 | -.001 | -.004 | -.048 | .767 |
| 26.0 | .252 | .000 | -.002 | .732 | 86.0 | .088 | .006 | -.021 | .862 | 146.0 | -.003 | -.003 | -.045 | .760 |
| 28.0 | .244 | .001 | -.002 | .740 | 88.0 | .074 | .006 | -.023 | .862 | 148.0 | .011 | -.002 | -.045 | .754 |
| 30.0 | .246 | .001 | -.004 | .747 | 90.0 | .060 | .005 | -.024 | .862 | 150.0 | .027 | -.001 | -.045 | .747 |
| 32.0 | .252 | .002 | -.005 | .754 | 92.0 | .045 | .004 | -.025 | .862 | 152.0 | .038 | .000 | -.043 | .740 |
| 34.0 | .261 | .003 | -.006 | .760 | 94.0 | .037 | .003 | -.028 | .862 | 154.0 | .050 | .001 | -.042 | .732 |
| 36.0 | .263 | .004 | -.006 | .767 | 96.0 | .035 | .002 | -.032 | .861 | 156.0 | .071 | .002 | -.041 | .725 |
| 38.0 | .260 | .005 | -.007 | .773 | 98.0 | .038 | .002 | -.037 | .860 | 158.0 | .088 | .003 | -.040 | .718 |
| 40.0 | .258 | .005 | -.007 | .780 | 100.0 | .044 | .001 | -.041 | .859 | 160.0 | .107 | .003 | -.038 | .710 |
| 42.0 | .259 | .006 | -.008 | .786 | 102.0 | .049 | .001 | -.045 | .857 | 162.0 | .130 | .004 | -.039 | .703 |
| 44.0 | .251 | .006 | -.008 | .792 | 104.0 | .045 | .000 | -.049 | .855 | 164.0 | .142 | .004 | -.036 | .695 |
| 46.0 | .245 | .007 | -.008 | .797 | 106.0 | .039 | -.000 | -.051 | .853 | 166.0 | .167 | .005 | -.038 | .687 |
| 48.0 | .243 | .008 | -.010 | .803 | 108.0 | .030 | -.001 | -.054 | .851 | 168.0 | .186 | .004 | -.037 | .679 |
| 50.0 | .236 | .008 | -.010 | .808 | 110.0 | .016 | -.001 | -.055 | .848 | 170.0 | .203 | .004 | -.035 | .671 |
| 52.0 | .228 | .008 | -.010 | .813 | 112.0 | .001 | -.002 | -.056 | .845 | 172.0 | .234 | .004 | -.035 | .663 |
| 54.0 | .220 | .009 | -.011 | .818 | 114.0 | -.013 | -.002 | -.057 | .842 | 174.0 | .254 | .003 | -.034 | .655 |
| 56.0 | .213 | .009 | -.011 | .823 | 116.0 | -.028 | -.003 | -.057 | .839 | 176.0 | .278 | .002 | -.033 | .647 |
| 58.0 | .206 | .009 | -.011 | .827 | 118.0 | -.046 | -.004 | -.057 | .835 | 178.0 | .303 | .002 | -.032 | .639 |

FLT 63 RUN9

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 9 TIME 54467.200 RN/M= 16.81 MILLION ROTOR SPEED= 34.0810 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .328 | .000 | -.030 | .631 | 240.0 | .822 | -.060 | -.003 | .431 | 300.0 | .662 | -.042 | -.001 | .431 |
| 182.0 | .355 | -.001 | -.031 | .623 | 242.0 | .824 | -.060 | -.004 | .427 | 302.0 | .658 | -.042 | -.004 | .435 |
| 184.0 | .378 | -.003 | -.029 | .615 | 244.0 | .822 | -.061 | -.001 | .424 | 304.0 | .657 | -.041 | -.005 | .439 |
| 186.0 | .404 | -.004 | -.027 | .607 | 246.0 | .822 | -.062 | -.002 | .420 | 306.0 | .648 | -.039 | -.007 | .444 |
| 188.0 | .425 | -.006 | -.026 | .599 | 248.0 | .828 | -.063 | -.003 | .417 | 308.0 | .649 | -.038 | -.010 | .449 |
| 190.0 | .449 | -.008 | -.025 | .591 | 250.0 | .822 | -.063 | -.000 | .414 | 310.0 | .641 | -.037 | -.008 | .454 |
| 192.0 | .478 | -.011 | -.025 | .583 | 252.0 | .813 | -.063 | -.001 | .411 | 312.0 | .636 | -.036 | -.011 | .459 |
| 194.0 | .504 | -.014 | -.024 | .575 | 254.0 | .819 | -.064 | -.001 | .409 | 314.0 | .617 | -.035 | -.008 | .465 |
| 196.0 | .533 | -.016 | -.025 | .568 | 256.0 | .818 | -.063 | -.003 | .407 | 316.0 | .596 | -.035 | -.004 | .470 |
| 198.0 | .562 | -.019 | -.025 | .560 | 258.0 | .817 | -.062 | -.005 | .405 | 318.0 | .584 | -.033 | -.004 | .476 |
| 200.0 | .586 | -.022 | -.024 | .552 | 260.0 | .813 | -.063 | -.002 | .404 | 320.0 | .568 | -.031 | -.001 | .482 |
| 202.0 | .612 | -.025 | -.024 | .545 | 262.0 | .796 | -.060 | -.001 | .402 | 322.0 | .561 | -.030 | -.003 | .489 |
| 204.0 | .635 | -.028 | -.022 | .537 | 264.0 | .788 | -.061 | .001 | .401 | 324.0 | .556 | -.030 | -.003 | .495 |
| 206.0 | .652 | -.031 | -.020 | .530 | 266.0 | .789 | -.061 | -.000 | .401 | 326.0 | .547 | -.028 | -.004 | .502 |
| 208.0 | .672 | -.035 | -.019 | .523 | 268.0 | .766 | -.061 | -.001 | .400 | 328.0 | .538 | -.028 | -.005 | .508 |
| 210.0 | .694 | -.038 | -.015 | .516 | 270.0 | .760 | -.059 | -.001 | .400 | 330.0 | .529 | -.027 | -.005 | .515 |
| 212.0 | .715 | -.042 | -.014 | .509 | 272.0 | .773 | -.058 | .000 | .400 | 332.0 | .523 | -.025 | -.005 | .522 |
| 214.0 | .727 | -.045 | -.011 | .502 | 274.0 | .767 | -.057 | -.000 | .401 | 334.0 | .517 | -.024 | -.004 | .530 |
| 216.0 | .746 | -.047 | -.010 | .495 | 276.0 | .764 | -.057 | -.000 | .401 | 336.0 | .512 | -.023 | -.004 | .537 |
| 218.0 | .756 | -.049 | -.009 | .489 | 278.0 | .751 | -.055 | -.001 | .402 | 338.0 | .503 | -.022 | -.004 | .544 |
| 220.0 | .774 | -.050 | -.009 | .483 | 280.0 | .745 | -.054 | -.001 | .404 | 340.0 | .493 | -.021 | -.002 | .552 |
| 222.0 | .780 | -.052 | -.008 | .477 | 282.0 | .732 | -.053 | .000 | .405 | 342.0 | .484 | -.021 | -.001 | .559 |
| 224.0 | .796 | -.053 | -.009 | .471 | 284.0 | .719 | -.053 | .002 | .407 | 344.0 | .478 | -.020 | -.002 | .567 |
| 226.0 | .797 | -.054 | -.007 | .465 | 286.0 | .721 | -.051 | -.001 | .409 | 346.0 | .471 | -.019 | -.001 | .575 |
| 228.0 | .810 | -.055 | -.006 | .460 | 288.0 | .706 | -.050 | .000 | .411 | 348.0 | .472 | -.019 | -.000 | .583 |
| 230.0 | .807 | -.057 | -.004 | .454 | 290.0 | .707 | -.049 | -.002 | .414 | 350.0 | .470 | -.019 | -.001 | .591 |
| 232.0 | .806 | -.057 | -.003 | .449 | 292.0 | .710 | -.048 | -.005 | .417 | 352.0 | .461 | -.018 | -.001 | .599 |
| 234.0 | .813 | -.057 | -.005 | .444 | 294.0 | .697 | -.046 | -.004 | .420 | 354.0 | .459 | -.017 | -.001 | .607 |
| 236.0 | .802 | -.058 | -.000 | .440 | 296.0 | .681 | -.045 | .000 | .423 | 356.0 | .448 | -.016 | -.002 | .615 |
| 238.0 | .811 | -.060 | -.000 | .435 | 298.0 | .680 | -.044 | -.003 | .427 | 358.0 | .430 | -.015 | -.002 | .623 |

FLT 63 RUN9

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS    NASA-LANGLEY AH-1G    78/11/14.

FLT 63 RUN 10    TIME 54541.600    RN/M= 16.78 MILLION    ROTOR SPEED= 34.0841 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .422 | -.015 | -.002 | .631 | 60.0 | .215 | .010 | -.010 | .847 | 120.0 | -.082 | -.004 | -.053 | .847 |
| 2.0 | .407 | -.014 | -.002 | .639 | 62.0 | .213 | .010 | -.011 | .851 | 122.0 | -.074 | -.005 | -.057 | .842 |
| 4.0 | .390 | -.012 | -.003 | .648 | 64.0 | .217 | .010 | -.013 | .855 | 124.0 | -.063 | -.006 | -.061 | .838 |
| 6.0 | .370 | -.011 | .000 | .657 | 66.0 | .211 | .010 | -.012 | .859 | 126.0 | -.065 | -.006 | -.064 | .833 |
| 8.0 | .350 | -.010 | .001 | .665 | 68.0 | .203 | .010 | -.011 | .862 | 128.0 | -.064 | -.007 | -.066 | .827 |
| 10.0 | .342 | -.008 | -.001 | .674 | 70.0 | .196 | .010 | -.011 | .865 | 130.0 | -.064 | -.008 | -.068 | .822 |
| 12.0 | .333 | -.007 | -.001 | .682 | 72.0 | .177 | .009 | -.010 | .868 | 132.0 | -.073 | -.009 | -.067 | .816 |
| 14.0 | .321 | -.006 | -.002 | .691 | 74.0 | .162 | .009 | -.010 | .870 | 134.0 | -.081 | -.009 | -.066 | .810 |
| 16.0 | .310 | -.005 | -.002 | .699 | 76.0 | .150 | .009 | -.011 | .873 | 136.0 | -.093 | -.010 | -.063 | .804 |
| 18.0 | .298 | -.004 | -.001 | .708 | 78.0 | .133 | .008 | -.011 | .875 | 138.0 | -.099 | -.011 | -.062 | .798 |
| 20.0 | .289 | -.002 | .001 | .716 | 80.0 | .111 | .008 | -.012 | .876 | 140.0 | -.110 | -.011 | -.060 | .791 |
| 22.0 | .278 | -.002 | .000 | .724 | 82.0 | .096 | .008 | -.014 | .878 | 142.0 | -.111 | -.011 | -.060 | .784 |
| 24.0 | .272 | -.002 | -.003 | .732 | 84.0 | .080 | .008 | -.017 | .879 | 144.0 | -.083 | -.011 | -.060 | .777 |
| 26.0 | .261 | -.001 | -.003 | .740 | 86.0 | .064 | .008 | -.020 | .880 | 146.0 | -.051 | -.010 | -.057 | .770 |
| 28.0 | .260 | -.000 | -.003 | .748 | 88.0 | .046 | .008 | -.023 | .880 | 148.0 | -.023 | -.009 | -.055 | .763 |
| 30.0 | .266 | .001 | -.004 | .755 | 90.0 | .027 | .007 | -.026 | .880 | 150.0 | -.001 | -.007 | -.051 | .755 |
| 32.0 | .270 | .002 | -.003 | .763 | 92.0 | .013 | .006 | -.030 | .880 | 152.0 | .007 | -.005 | -.049 | .748 |
| 34.0 | .276 | .003 | -.003 | .770 | 94.0 | -.004 | .006 | -.032 | .880 | 154.0 | .016 | -.004 | -.047 | .740 |
| 36.0 | .278 | .004 | -.004 | .777 | 96.0 | -.017 | .004 | -.034 | .879 | 156.0 | .030 | -.002 | -.045 | .732 |
| 38.0 | .280 | .005 | -.005 | .784 | 98.0 | -.031 | .004 | -.034 | .878 | 158.0 | .053 | -.000 | -.044 | .724 |
| 40.0 | .278 | .005 | -.006 | .791 | 100.0 | -.050 | .003 | -.034 | .876 | 160.0 | .076 | .001 | -.045 | .716 |
| 42.0 | .275 | .006 | -.006 | .798 | 102.0 | -.068 | .002 | -.032 | .875 | 162.0 | .101 | .003 | -.045 | .708 |
| 44.0 | .263 | .006 | -.005 | .804 | 104.0 | -.086 | .001 | -.031 | .873 | 164.0 | .126 | .003 | -.043 | .700 |
| 46.0 | .257 | .007 | -.005 | .810 | 106.0 | -.099 | -.000 | -.031 | .871 | 166.0 | .149 | .003 | -.041 | .691 |
| 48.0 | .252 | .008 | -.006 | .816 | 108.0 | -.115 | -.001 | -.030 | .868 | 168.0 | .172 | .004 | -.040 | .683 |
| 50.0 | .245 | .008 | -.007 | .822 | 110.0 | -.127 | -.002 | -.030 | .865 | 170.0 | .199 | .004 | -.040 | .674 |
| 52.0 | .240 | .009 | -.007 | .827 | 112.0 | -.133 | -.002 | -.032 | .862 | 172.0 | .229 | .003 | -.038 | .665 |
| 54.0 | .234 | .009 | -.008 | .832 | 114.0 | -.129 | -.003 | -.036 | .859 | 174.0 | .253 | .003 | -.037 | .657 |
| 56.0 | .230 | .010 | -.009 | .837 | 116.0 | -.112 | -.003 | -.042 | .855 | 176.0 | .283 | .003 | -.036 | .648 |
| 58.0 | .220 | .010 | -.010 | .842 | 118.0 | -.096 | -.004 | -.048 | .851 | 178.0 | .313 | .002 | -.037 | .639 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 10 TIME 54541.600 RN/M= 16.78 MILLION ROTOR SPEED= 34.0841 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .337 | .000 | -.035 | .631 | 240.0 | .924 | -.087 | .006 | .415 | 300.0 | .698 | -.049 | .000 | .414 |
| 182.0 | .368 | -.002 | -.033 | .622 | 242.0 | .921 | -.084 | .003 | .410 | 302.0 | .689 | -.048 | -.001 | .419 |
| 184.0 | .393 | -.003 | -.031 | .613 | 244.0 | .910 | -.081 | .004 | .406 | 304.0 | .678 | -.046 | -.003 | .424 |
| 186.0 | .428 | -.005 | -.031 | .605 | 246.0 | .913 | -.079 | -.000 | .403 | 306.0 | .669 | -.045 | -.005 | .429 |
| 188.0 | .455 | -.007 | -.029 | .596 | 248.0 | .915 | -.078 | -.003 | .399 | 308.0 | .663 | -.044 | -.005 | .434 |
| 190.0 | .487 | -.010 | -.027 | .587 | 250.0 | .919 | -.078 | -.000 | .396 | 310.0 | .653 | -.042 | -.007 | .439 |
| 192.0 | .516 | -.013 | -.026 | .579 | 252.0 | .909 | -.078 | -.000 | .393 | 312.0 | .642 | -.041 | -.007 | .445 |
| 194.0 | .543 | -.016 | -.025 | .570 | 254.0 | .912 | -.079 | .001 | .391 | 314.0 | .622 | -.039 | -.005 | .451 |
| 196.0 | .580 | -.019 | -.024 | .562 | 256.0 | .898 | -.078 | -.000 | .389 | 316.0 | .609 | -.038 | -.004 | .457 |
| 198.0 | .599 | -.022 | -.021 | .554 | 258.0 | .898 | -.077 | -.002 | .387 | 318.0 | .608 | -.037 | -.003 | .463 |
| 200.0 | .636 | -.026 | -.024 | .545 | 260.0 | .900 | -.076 | -.002 | .385 | 320.0 | .599 | -.035 | -.005 | .470 |
| 202.0 | .658 | -.029 | -.020 | .537 | 262.0 | .879 | -.075 | .001 | .384 | 322.0 | .588 | -.034 | -.004 | .477 |
| 204.0 | .683 | -.033 | -.019 | .529 | 264.0 | .881 | -.075 | .001 | .382 | 324.0 | .582 | -.032 | -.005 | .484 |
| 206.0 | .709 | -.037 | -.016 | .521 | 266.0 | .867 | -.074 | .001 | .382 | 326.0 | .573 | -.031 | -.005 | .491 |
| 208.0 | .737 | -.042 | -.015 | .514 | 268.0 | .878 | -.072 | -.003 | .381 | 328.0 | .553 | -.030 | -.003 | .498 |
| 210.0 | .754 | -.046 | -.013 | .506 | 270.0 | .856 | -.071 | .001 | .381 | 330.0 | .540 | -.029 | -.002 | .506 |
| 212.0 | .780 | -.051 | -.010 | .499 | 272.0 | .843 | -.070 | .000 | .381 | 332.0 | .527 | -.028 | -.001 | .513 |
| 214.0 | .796 | -.056 | -.005 | .491 | 274.0 | .839 | -.070 | -.001 | .382 | 334.0 | .519 | -.027 | -.001 | .521 |
| 216.0 | .827 | -.062 | -.006 | .484 | 276.0 | .824 | -.068 | -.002 | .382 | 336.0 | .513 | -.026 | -.002 | .529 |
| 218.0 | .854 | -.068 | -.005 | .477 | 278.0 | .817 | -.067 | -.002 | .383 | 338.0 | .504 | -.025 | -.001 | .537 |
| 220.0 | .875 | -.074 | .001 | .470 | 280.0 | .803 | -.065 | .002 | .385 | 340.0 | .490 | -.024 | -.001 | .545 |
| 222.0 | .887 | -.081 | .004 | .464 | 282.0 | .790 | -.063 | .005 | .386 | 342.0 | .483 | -.022 | -.000 | .553 |
| 224.0 | .899 | -.087 | .007 | .457 | 284.0 | .784 | -.062 | .005 | .388 | 344.0 | .475 | -.021 | -.000 | .562 |
| 226.0 | .914 | -.092 | .010 | .451 | 286.0 | .780 | -.061 | .003 | .391 | 346.0 | .471 | -.021 | -.002 | .570 |
| 228.0 | .930 | -.095 | .011 | .445 | 288.0 | .773 | -.059 | -.002 | .393 | 348.0 | .461 | -.020 | -.001 | .578 |
| 230.0 | .944 | -.097 | .009 | .440 | 290.0 | .737 | -.057 | .005 | .396 | 350.0 | .456 | -.019 | .000 | .587 |
| 232.0 | .946 | -.098 | .010 | .434 | 292.0 | .723 | -.056 | .007 | .399 | 352.0 | .452 | -.018 | -.000 | .596 |
| 234.0 | .936 | -.096 | .010 | .429 | 294.0 | .715 | -.054 | .006 | .403 | 354.0 | .449 | -.018 | .000 | .604 |
| 236.0 | .947 | -.094 | .005 | .424 | 296.0 | .713 | -.052 | .003 | .406 | 356.0 | .447 | -.017 | -.001 | .613 |
| 238.0 | .941 | -.090 | .006 | .419 | 298.0 | .712 | -.050 | .000 | .410 | 358.0 | .444 | -.016 | -.002 | .622 |

FLT 63 RUN10

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 11 TIME 54648.800 RN/M= 16.81 MILLION ROTOR SPEED= 34.0717 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .412 | -.014 | -.003 | .631 | 60.0 | .236 | .011 | -.010 | .856 | 120.0 | -.134 | -.003 | -.050 | .856 |
| 2.0 | .402 | -.012 | -.004 | .640 | 62.0 | .234 | .011 | -.011 | .860 | 122.0 | -.113 | -.004 | -.053 | .851 |
| 4.0 | .384 | -.011 | -.002 | .649 | 64.0 | .216 | .010 | -.009 | .864 | 124.0 | -.092 | -.005 | -.057 | .846 |
| 6.0 | .373 | -.009 | -.004 | .658 | 66.0 | .211 | .010 | -.011 | .868 | 126.0 | -.084 | -.006 | -.059 | .841 |
| 8.0 | .356 | -.008 | -.004 | .667 | 68.0 | .201 | .010 | -.013 | .871 | 128.0 | -.075 | -.007 | -.061 | .835 |
| 10.0 | .345 | -.007 | -.003 | .676 | 70.0 | .186 | .010 | -.013 | .875 | 130.0 | -.068 | -.008 | -.062 | .830 |
| 12.0 | .327 | -.006 | -.002 | .685 | 72.0 | .162 | .010 | -.015 | .878 | 132.0 | -.066 | -.009 | -.062 | .824 |
| 14.0 | .314 | -.005 | -.003 | .694 | 74.0 | .144 | .011 | -.017 | .880 | 134.0 | -.058 | -.009 | -.064 | .818 |
| 16.0 | .306 | -.004 | -.004 | .702 | 76.0 | .132 | .011 | -.022 | .883 | 136.0 | -.060 | -.010 | -.065 | .811 |
| 18.0 | .301 | -.003 | -.006 | .711 | 78.0 | .114 | .012 | -.026 | .885 | 138.0 | -.071 | -.010 | -.063 | .805 |
| 20.0 | .290 | -.002 | -.005 | .720 | 80.0 | .097 | .012 | -.030 | .886 | 140.0 | -.086 | -.011 | -.059 | .798 |
| 22.0 | .283 | -.001 | -.004 | .728 | 82.0 | .082 | .012 | -.034 | .888 | 142.0 | -.084 | -.011 | -.059 | .791 |
| 24.0 | .281 | -.000 | -.004 | .736 | 84.0 | .060 | .012 | -.037 | .889 | 144.0 | -.051 | -.011 | -.058 | .784 |
| 26.0 | .283 | .000 | -.005 | .745 | 86.0 | .042 | .012 | -.039 | .890 | 146.0 | -.012 | -.010 | -.057 | .776 |
| 28.0 | .288 | .001 | -.005 | .753 | 88.0 | .026 | .011 | -.043 | .890 | 148.0 | .021 | -.007 | -.056 | .769 |
| 30.0 | .291 | .002 | -.003 | .761 | 90.0 | .011 | .010 | -.046 | .890 | 150.0 | .030 | -.005 | -.050 | .761 |
| 32.0 | .295 | .003 | -.004 | .768 | 92.0 | -.005 | .009 | -.046 | .890 | 152.0 | .038 | -.004 | -.047 | .753 |
| 34.0 | .303 | .004 | -.006 | .776 | 94.0 | -.020 | .008 | -.046 | .890 | 154.0 | .055 | -.002 | -.045 | .745 |
| 36.0 | .302 | .004 | -.006 | .783 | 96.0 | -.038 | .007 | -.048 | .889 | 156.0 | .076 | -.000 | -.046 | .737 |
| 38.0 | .302 | .005 | -.005 | .791 | 98.0 | -.055 | .006 | -.047 | .888 | 158.0 | .095 | .001 | -.044 | .728 |
| 40.0 | .298 | .006 | -.005 | .798 | 100.0 | -.067 | .006 | -.049 | .886 | 160.0 | .119 | .002 | -.043 | .720 |
| 42.0 | .289 | .007 | -.005 | .804 | 102.0 | -.079 | .005 | -.050 | .885 | 162.0 | .149 | .003 | -.044 | .711 |
| 44.0 | .282 | .008 | -.005 | .811 | 104.0 | -.094 | .004 | -.049 | .883 | 164.0 | .172 | .004 | -.041 | .703 |
| 46.0 | .278 | .008 | -.006 | .818 | 106.0 | -.102 | .004 | -.051 | .880 | 166.0 | .195 | .004 | -.039 | .694 |
| 48.0 | .269 | .008 | -.006 | .824 | 108.0 | -.115 | .003 | -.051 | .878 | 168.0 | .223 | .004 | -.037 | .685 |
| 50.0 | .262 | .009 | -.006 | .830 | 110.0 | -.126 | .002 | -.050 | .875 | 170.0 | .249 | .003 | -.036 | .676 |
| 52.0 | .253 | .010 | -.007 | .835 | 112.0 | -.134 | .001 | -.050 | .872 | 172.0 | .282 | .002 | -.036 | .667 |
| 54.0 | .243 | .010 | -.006 | .841 | 114.0 | -.145 | .001 | -.049 | .868 | 174.0 | .308 | .002 | -.034 | .658 |
| 56.0 | .243 | .010 | -.008 | .846 | 116.0 | -.152 | -.000 | -.047 | .864 | 176.0 | .330 | .000 | -.032 | .649 |
| 58.0 | .244 | .010 | -.010 | .851 | 118.0 | -.147 | -.001 | -.048 | .860 | 178.0 | .362 | -.002 | -.031 | .640 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/14.

FLT 63 RUN 11 TIME 54648.800 RN/M= 16.81 MILLION ROTOR SPEED= 34.0717 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .395 | -.003 | -.030 | .631 | 240.0 | .982 | -.102 | .006 | .406 | 300.0 | .765 | -.057 | -.003 | .406 |
| 182.0 | .419 | -.005 | -.028 | .622 | 242.0 | .980 | -.098 | .001 | .402 | 302.0 | .749 | -.055 | -.004 | .411 |
| 184.0 | .452 | -.008 | -.027 | .613 | 244.0 | .968 | -.095 | .000 | .398 | 304.0 | .744 | -.054 | -.005 | .416 |
| 186.0 | .475 | -.010 | -.025 | .604 | 246.0 | .973 | -.091 | -.004 | .394 | 306.0 | .738 | -.052 | -.005 | .421 |
| 188.0 | .504 | -.013 | -.024 | .595 | 248.0 | .972 | -.088 | -.003 | .390 | 308.0 | .736 | -.052 | -.005 | .426 |
| 190.0 | .538 | -.016 | -.024 | .586 | 250.0 | .954 | -.087 | .001 | .387 | 310.0 | .729 | -.051 | -.005 | .432 |
| 192.0 | .571 | -.019 | -.025 | .577 | 252.0 | .943 | -.086 | -.000 | .384 | 312.0 | .718 | -.050 | -.005 | .438 |
| 194.0 | .594 | -.023 | -.023 | .568 | 254.0 | .953 | -.086 | -.002 | .382 | 314.0 | .707 | -.048 | -.004 | .444 |
| 196.0 | .620 | -.026 | -.022 | .560 | 256.0 | .961 | -.085 | -.005 | .379 | 316.0 | .692 | -.046 | -.005 | .451 |
| 198.0 | .645 | -.029 | -.020 | .551 | 258.0 | .954 | -.085 | -.003 | .377 | 318.0 | .684 | -.046 | -.005 | .457 |
| 200.0 | .666 | -.033 | -.019 | .542 | 260.0 | .952 | -.084 | -.003 | .375 | 320.0 | .666 | -.043 | -.004 | .464 |
| 202.0 | .696 | -.038 | -.017 | .534 | 262.0 | .939 | -.084 | -.004 | .374 | 322.0 | .655 | -.042 | -.005 | .471 |
| 204.0 | .715 | -.042 | -.014 | .526 | 264.0 | .921 | -.085 | -.002 | .373 | 324.0 | .637 | -.040 | -.002 | .478 |
| 206.0 | .758 | -.047 | -.016 | .517 | 266.0 | .920 | -.084 | -.002 | .372 | 326.0 | .614 | -.039 | .001 | .486 |
| 208.0 | .775 | -.052 | -.013 | .509 | 268.0 | .910 | -.082 | -.001 | .372 | 328.0 | .610 | -.037 | .001 | .493 |
| 210.0 | .800 | -.058 | -.009 | .501 | 270.0 | .916 | -.081 | -.004 | .371 | 330.0 | .596 | -.037 | .002 | .501 |
| 212.0 | .829 | -.064 | -.009 | .494 | 272.0 | .900 | -.080 | .001 | .372 | 332.0 | .590 | -.035 | .000 | .509 |
| 214.0 | .855 | -.072 | -.004 | .486 | 274.0 | .902 | -.079 | -.002 | .372 | 334.0 | .589 | -.034 | -.002 | .517 |
| 216.0 | .876 | -.079 | -.002 | .479 | 276.0 | .898 | -.078 | -.005 | .373 | 336.0 | .569 | -.032 | .001 | .525 |
| 218.0 | .902 | -.086 | .001 | .471 | 278.0 | .886 | -.076 | -.003 | .374 | 338.0 | .558 | -.031 | .002 | .533 |
| 220.0 | .922 | -.093 | .003 | .464 | 280.0 | .873 | -.074 | -.001 | .375 | 340.0 | .547 | -.030 | .001 | .542 |
| 222.0 | .940 | -.098 | .006 | .457 | 282.0 | .866 | -.073 | -.001 | .377 | 342.0 | .540 | -.028 | .001 | .550 |
| 224.0 | .951 | -.103 | .009 | .451 | 284.0 | .862 | -.072 | -.001 | .379 | 344.0 | .523 | -.027 | .002 | .559 |
| 226.0 | .962 | -.107 | .010 | .444 | 286.0 | .834 | -.069 | .002 | .381 | 346.0 | .511 | -.025 | .002 | .568 |
| 228.0 | .971 | -.109 | .011 | .438 | 288.0 | .823 | -.068 | .002 | .384 | 348.0 | .496 | -.024 | .002 | .577 |
| 230.0 | .967 | -.110 | .013 | .432 | 290.0 | .811 | -.066 | .002 | .387 | 350.0 | .484 | -.022 | .002 | .586 |
| 232.0 | .971 | -.110 | .014 | .427 | 292.0 | .797 | -.065 | .002 | .390 | 352.0 | .481 | -.021 | .001 | .595 |
| 234.0 | .971 | -.108 | .014 | .421 | 294.0 | .790 | -.063 | .002 | .394 | 354.0 | .469 | -.020 | .001 | .604 |
| 236.0 | .970 | -.106 | .012 | .416 | 296.0 | .788 | -.060 | -.001 | .398 | 356.0 | .455 | -.019 | -.001 | .613 |
| 238.0 | .973 | -.104 | .010 | .411 | 298.0 | .781 | -.059 | -.004 | .402 | 358.0 | .441 | -.018 | .000 | .622 |

FLT 63 RUN11

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 15 TIME 54494.400 RN/M= 16.14 MILLION ROTOR SPEED= 34.0711 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .236 | -.002 | .001 | .621 | 60.0 | .124 | .003 | -.006 | .766 | 120.0 | .003 | .005 | -.024 | .766 |
| 2.0 | .223 | -.001 | .002 | .627 | 62.0 | .130 | .004 | -.007 | .769 | 122.0 | -.000 | .006 | -.023 | .763 |
| 4.0 | .219 | -.000 | .001 | .632 | 64.0 | .136 | .004 | -.007 | .771 | 124.0 | .000 | .006 | -.022 | .760 |
| 6.0 | .211 | .001 | .000 | .638 | 66.0 | .143 | .004 | -.007 | .774 | 126.0 | .002 | .006 | -.023 | .756 |
| 8.0 | .202 | .001 | -.000 | .644 | 68.0 | .151 | .004 | -.007 | .776 | 128.0 | -.004 | .006 | -.022 | .753 |
| 10.0 | .198 | .001 | -.002 | .650 | 70.0 | .158 | .004 | -.007 | .778 | 130.0 | -.005 | .005 | -.022 | .749 |
| 12.0 | .186 | .002 | -.002 | .656 | 72.0 | .163 | .004 | -.007 | .780 | 132.0 | -.006 | .005 | -.023 | .745 |
| 14.0 | .179 | .002 | .000 | .661 | 74.0 | .161 | .004 | -.006 | .782 | 134.0 | -.004 | .004 | -.023 | .741 |
| 16.0 | .176 | .002 | .002 | .667 | 76.0 | .156 | .004 | -.007 | .783 | 136.0 | -.001 | .004 | -.024 | .737 |
| 18.0 | .177 | .002 | -.002 | .672 | 78.0 | .144 | .004 | -.008 | .784 | 138.0 | .002 | .004 | -.024 | .733 |
| 20.0 | .169 | .002 | -.002 | .678 | 80.0 | .133 | .004 | -.009 | .786 | 140.0 | .005 | .004 | -.023 | .728 |
| 22.0 | .162 | .002 | -.002 | .683 | 82.0 | .117 | .004 | -.010 | .787 | 142.0 | .008 | .004 | -.023 | .724 |
| 24.0 | .155 | .003 | -.002 | .689 | 84.0 | .099 | .004 | -.011 | .787 | 144.0 | .011 | .004 | -.023 | .719 |
| 26.0 | .148 | .003 | -.002 | .694 | 86.0 | .080 | .003 | -.012 | .788 | 146.0 | .017 | .004 | -.023 | .714 |
| 28.0 | .149 | .003 | -.003 | .699 | 88.0 | .064 | .004 | -.014 | .788 | 148.0 | .021 | .004 | -.022 | .710 |
| 30.0 | .147 | .003 | -.004 | .704 | 90.0 | .053 | .003 | -.014 | .788 | 150.0 | .025 | .004 | -.022 | .705 |
| 32.0 | .144 | .003 | -.004 | .709 | 92.0 | .044 | .003 | -.015 | .788 | 152.0 | .030 | .004 | -.022 | .699 |
| 34.0 | .143 | .003 | -.005 | .714 | 94.0 | .039 | .003 | -.016 | .788 | 154.0 | .034 | .004 | -.021 | .694 |
| 36.0 | .134 | .003 | -.003 | .719 | 96.0 | .032 | .003 | -.018 | .787 | 156.0 | .041 | .005 | -.021 | .689 |
| 38.0 | .134 | .003 | -.004 | .724 | 98.0 | .022 | .003 | -.018 | .787 | 158.0 | .053 | .004 | -.021 | .684 |
| 40.0 | .137 | .003 | -.005 | .728 | 100.0 | .018 | .003 | -.019 | .786 | 160.0 | .051 | .004 | -.018 | .678 |
| 42.0 | .134 | .003 | -.005 | .733 | 102.0 | .013 | .003 | -.019 | .785 | 162.0 | .064 | .004 | -.019 | .673 |
| 44.0 | .134 | .003 | -.005 | .737 | 104.0 | .006 | .003 | -.020 | .783 | 164.0 | .070 | .004 | -.020 | .667 |
| 46.0 | .131 | .003 | -.005 | .741 | 106.0 | .007 | .004 | -.021 | .782 | 166.0 | .081 | .004 | -.021 | .661 |
| 48.0 | .131 | .003 | -.006 | .745 | 108.0 | .006 | .004 | -.021 | .780 | 168.0 | .091 | .004 | -.021 | .656 |
| 50.0 | .128 | .003 | -.006 | .749 | 110.0 | .001 | .004 | -.021 | .778 | 170.0 | .104 | .004 | -.021 | .650 |
| 52.0 | .125 | .003 | -.007 | .753 | 112.0 | .003 | .005 | -.022 | .776 | 172.0 | .110 | .004 | -.020 | .644 |
| 54.0 | .125 | .003 | -.006 | .756 | 114.0 | .003 | .005 | -.022 | .774 | 174.0 | .119 | .004 | -.020 | .638 |
| 56.0 | .125 | .003 | -.006 | .760 | 116.0 | .003 | .005 | -.023 | .771 | 176.0 | .129 | .004 | -.019 | .633 |
| 58.0 | .124 | .003 | -.005 | .763 | 118.0 | .002 | .005 | -.024 | .769 | 178.0 | .142 | .004 | -.020 | .627 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 15 TIME 54494.400 RN/M= 16.14 MILLION ROTOR SPEED= 34.0711 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .158 | .004 | -.021 | .621 | 240.0 | .507 | -.030 | .012 | .476 | 300.0 | .378 | -.017 | .010 | .476 |
| 182.0 | .171 | .004 | -.019 | .615 | 242.0 | .513 | -.030 | .012 | .473 | 302.0 | .361 | -.014 | .013 | .479 |
| 184.0 | .185 | .003 | -.018 | .609 | 244.0 | .514 | -.031 | .013 | .470 | 304.0 | .340 | -.013 | .014 | .482 |
| 186.0 | .195 | .003 | -.016 | .603 | 246.0 | .517 | -.031 | .012 | .468 | 306.0 | .338 | -.012 | .012 | .485 |
| 188.0 | .209 | .002 | -.016 | .598 | 248.0 | .516 | -.031 | .013 | .466 | 308.0 | .339 | -.011 | .008 | .489 |
| 190.0 | .229 | .002 | -.016 | .592 | 250.0 | .515 | -.031 | .013 | .463 | 310.0 | .329 | -.010 | .008 | .492 |
| 192.0 | .244 | .001 | -.015 | .586 | 252.0 | .518 | -.031 | .013 | .462 | 312.0 | .315 | -.010 | .012 | .496 |
| 194.0 | .264 | .001 | -.015 | .580 | 254.0 | .517 | -.032 | .014 | .460 | 314.0 | .312 | -.010 | .012 | .500 |
| 196.0 | .284 | -.000 | -.015 | .575 | 256.0 | .513 | -.032 | .015 | .458 | 316.0 | .310 | -.009 | .010 | .504 |
| 198.0 | .293 | -.002 | -.013 | .569 | 258.0 | .516 | -.032 | .016 | .457 | 318.0 | .306 | -.008 | .009 | .509 |
| 200.0 | .305 | -.003 | -.012 | .564 | 260.0 | .517 | -.032 | .016 | .456 | 320.0 | .309 | -.008 | .009 | .513 |
| 202.0 | .319 | -.004 | -.011 | .558 | 262.0 | .515 | -.032 | .016 | .455 | 322.0 | .303 | -.008 | .009 | .518 |
| 204.0 | .341 | -.005 | -.011 | .553 | 264.0 | .511 | -.032 | .017 | .454 | 324.0 | .293 | -.008 | .011 | .522 |
| 206.0 | .352 | -.007 | -.009 | .547 | 266.0 | .513 | -.031 | .015 | .454 | 326.0 | .298 | -.007 | .009 | .527 |
| 208.0 | .366 | -.008 | -.007 | .542 | 268.0 | .512 | -.032 | .016 | .453 | 328.0 | .299 | -.007 | .008 | .532 |
| 210.0 | .384 | -.009 | -.007 | .537 | 270.0 | .507 | -.032 | .016 | .453 | 330.0 | .297 | -.007 | .008 | .537 |
| 212.0 | .393 | -.011 | -.005 | .532 | 272.0 | .509 | -.031 | .015 | .453 | 332.0 | .291 | -.007 | .009 | .542 |
| 214.0 | .413 | -.012 | -.005 | .527 | 274.0 | .498 | -.030 | .016 | .454 | 334.0 | .293 | -.006 | .008 | .547 |
| 216.0 | .423 | -.014 | -.003 | .522 | 276.0 | .498 | -.030 | .015 | .454 | 336.0 | .294 | -.006 | .007 | .552 |
| 218.0 | .431 | -.016 | -.001 | .518 | 278.0 | .488 | -.029 | .016 | .455 | 338.0 | .295 | -.006 | .006 | .558 |
| 220.0 | .443 | -.017 | -.000 | .513 | 280.0 | .485 | -.029 | .016 | .456 | 340.0 | .290 | -.006 | .008 | .563 |
| 222.0 | .453 | -.018 | .000 | .509 | 282.0 | .493 | -.028 | .013 | .457 | 342.0 | .285 | -.006 | .008 | .569 |
| 224.0 | .456 | -.020 | .004 | .505 | 284.0 | .482 | -.028 | .014 | .458 | 344.0 | .283 | -.006 | .007 | .574 |
| 226.0 | .467 | -.021 | .004 | .500 | 286.0 | .479 | -.027 | .014 | .460 | 346.0 | .281 | -.006 | .008 | .580 |
| 228.0 | .473 | -.023 | .005 | .496 | 288.0 | .466 | -.026 | .015 | .461 | 348.0 | .285 | -.005 | .005 | .586 |
| 230.0 | .479 | -.024 | .006 | .493 | 290.0 | .454 | -.025 | .015 | .463 | 350.0 | .282 | -.004 | .005 | .591 |
| 232.0 | .492 | -.025 | .006 | .489 | 292.0 | .447 | -.024 | .012 | .465 | 352.0 | .275 | -.004 | .004 | .597 |
| 234.0 | .500 | -.026 | .007 | .485 | 294.0 | .430 | -.022 | .015 | .468 | 354.0 | .261 | -.003 | .004 | .603 |
| 236.0 | .506 | -.027 | .008 | .482 | 296.0 | .427 | -.020 | .011 | .470 | 356.0 | .256 | -.003 | .003 | .609 |
| 238.0 | .506 | -.028 | .009 | .479 | 298.0 | .390 | -.018 | .015 | .473 | 358.0 | .247 | -.002 | .002 | .615 |

FLT 65 RUN15

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 18 TIME 54782.700 RN/M= 16.15 MILLION ROTOR SPEED= 34.5916 RAD/SEC

| AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|
| 0.0 | .354 | -.010 | .003 | .630 |
| 2.0 | .342 | -.008 | .001 | .636 |
| 4.0 | .333 | -.006 | -.000 | .642 |
| 6.0 | .324 | -.006 | .001 | .648 |
| 8.0 | .308 | -.005 | .002 | .654 |
| 10.0 | .295 | -.004 | .001 | .660 |
| 12.0 | .277 | -.003 | .001 | .665 |
| 14.0 | .271 | -.002 | -.000 | .671 |
| 16.0 | .277 | -.002 | -.001 | .677 |
| 18.0 | .282 | -.002 | .000 | .683 |
| 20.0 | .283 | -.003 | .003 | .688 |
| 22.0 | .280 | -.003 | .004 | .694 |
| 24.0 | .277 | -.003 | .003 | .699 |
| 26.0 | .264 | -.002 | .003 | .704 |
| 28.0 | .251 | -.002 | .003 | .710 |
| 30.0 | .234 | -.001 | .004 | .715 |
| 32.0 | .224 | -.001 | .002 | .720 |
| 34.0 | .220 | .000 | -.000 | .725 |
| 36.0 | .209 | .001 | -.000 | .730 |
| 38.0 | .201 | .001 | -.002 | .734 |
| 40.0 | .195 | .001 | -.003 | .739 |
| 42.0 | .198 | .001 | -.004 | .743 |
| 44.0 | .213 | .002 | -.006 | .748 |
| 46.0 | .239 | .002 | -.006 | .752 |
| 48.0 | .257 | .003 | -.007 | .756 |
| 50.0 | .267 | .003 | -.006 | .760 |
| 52.0 | .267 | .003 | -.004 | .763 |
| 54.0 | .274 | .004 | -.003 | .767 |
| 56.0 | .260 | .004 | -.002 | .770 |
| 58.0 | .278 | .004 | -.002 | .774 |

| AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|
| 60.0 | .276 | .005 | -.003 | .777 |
| 62.0 | .273 | .006 | -.003 | .780 |
| 64.0 | .282 | .004 | -.001 | .782 |
| 66.0 | .286 | .004 | -.001 | .785 |
| 68.0 | .294 | .004 | -.001 | .787 |
| 70.0 | .297 | .003 | .000 | .789 |
| 72.0 | .297 | .004 | .001 | .791 |
| 74.0 | .293 | .004 | .002 | .793 |
| 76.0 | .280 | .003 | .005 | .794 |
| 78.0 | .270 | .003 | .005 | .796 |
| 80.0 | .260 | .003 | .005 | .797 |
| 82.0 | .246 | .003 | .005 | .798 |
| 84.0 | .238 | .004 | .004 | .798 |
| 86.0 | .227 | .004 | .004 | .799 |
| 88.0 | .218 | .003 | .004 | .799 |
| 90.0 | .210 | .003 | .003 | .799 |
| 92.0 | .204 | .003 | .001 | .799 |
| 94.0 | .199 | .003 | .001 | .799 |
| 96.0 | .196 | .003 | -.001 | .798 |
| 98.0 | .196 | .003 | -.002 | .798 |
| 100.0 | .196 | .003 | -.003 | .797 |
| 102.0 | .196 | .003 | -.004 | .796 |
| 104.0 | .194 | .002 | -.005 | .794 |
| 106.0 | .197 | .003 | -.006 | .793 |
| 108.0 | .202 | .003 | -.008 | .791 |
| 110.0 | .204 | .002 | -.009 | .789 |
| 112.0 | .209 | .002 | -.010 | .787 |
| 114.0 | .217 | .002 | -.012 | .785 |
| 116.0 | .218 | .002 | -.012 | .782 |
| 118.0 | .220 | .002 | -.013 | .780 |

| AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|
| 120.0 | .221 | .001 | -.014 | .777 |
| 122.0 | .212 | .001 | -.013 | .774 |
| 124.0 | .199 | .001 | -.013 | .770 |
| 126.0 | .187 | .001 | -.013 | .767 |
| 128.0 | .175 | .001 | -.012 | .764 |
| 130.0 | .171 | .001 | -.012 | .760 |
| 132.0 | .171 | .000 | -.012 | .756 |
| 134.0 | .168 | -.000 | -.011 | .752 |
| 136.0 | .170 | -.001 | -.011 | .748 |
| 138.0 | .170 | -.001 | -.011 | .743 |
| 140.0 | .175 | -.001 | -.011 | .739 |
| 142.0 | .174 | -.001 | -.011 | .734 |
| 144.0 | .168 | -.001 | -.010 | .730 |
| 146.0 | .167 | -.000 | -.010 | .725 |
| 148.0 | .171 | -.000 | -.010 | .720 |
| 150.0 | .177 | -.000 | -.012 | .715 |
| 152.0 | .179 | -.000 | -.012 | .710 |
| 154.0 | .180 | -.000 | -.012 | .704 |
| 156.0 | .181 | .000 | -.012 | .699 |
| 158.0 | .184 | .000 | -.012 | .694 |
| 160.0 | .185 | .001 | -.012 | .688 |
| 162.0 | .186 | .000 | -.012 | .683 |
| 164.0 | .188 | .001 | -.012 | .677 |
| 166.0 | .193 | .000 | -.011 | .671 |
| 168.0 | .192 | .001 | -.011 | .666 |
| 170.0 | .197 | .001 | -.011 | .660 |
| 172.0 | .205 | .001 | -.012 | .654 |
| 174.0 | .212 | .000 | -.012 | .648 |
| 176.0 | .217 | .000 | -.012 | .642 |
| 178.0 | .225 | .000 | -.011 | .636 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 18 TIME 54782.700 RN/M= 16.15 MILLION ROTOR SPEED= 34.5916 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .233 | -.000 | -.011 | .630 | 240.0 | .580 | -.035 | .011 | .484 | 300.0 | .580 | -.044 | .022 | .484 |
| 182.0 | .240 | -.001 | -.011 | .624 | 242.0 | .587 | -.036 | .012 | .481 | 302.0 | .564 | -.038 | .014 | .487 |
| 184.0 | .248 | -.001 | -.010 | .619 | 244.0 | .605 | -.038 | .010 | .478 | 304.0 | .554 | -.034 | .009 | .490 |
| 186.0 | .259 | -.001 | -.011 | .613 | 246.0 | .569 | -.040 | .016 | .476 | 306.0 | .549 | -.032 | .007 | .493 |
| 188.0 | .266 | -.001 | -.010 | .607 | 248.0 | .593 | -.041 | .018 | .474 | 308.0 | .538 | -.030 | .008 | .497 |
| 190.0 | .273 | -.002 | -.009 | .601 | 250.0 | .603 | -.041 | .018 | .472 | 310.0 | .526 | -.030 | .012 | .501 |
| 192.0 | .284 | -.003 | -.009 | .595 | 252.0 | .607 | -.042 | .018 | .470 | 312.0 | .515 | -.029 | .015 | .505 |
| 194.0 | .286 | -.003 | -.008 | .590 | 254.0 | .616 | -.042 | .017 | .468 | 314.0 | .512 | -.028 | .016 | .509 |
| 196.0 | .300 | -.003 | -.008 | .584 | 256.0 | .623 | -.043 | .015 | .466 | 316.0 | .510 | -.028 | .015 | .513 |
| 198.0 | .311 | -.004 | -.009 | .578 | 258.0 | .630 | -.043 | .015 | .465 | 318.0 | .506 | -.028 | .014 | .517 |
| 200.0 | .323 | -.005 | -.009 | .573 | 260.0 | .632 | -.043 | .016 | .464 | 320.0 | .504 | -.027 | .012 | .522 |
| 202.0 | .340 | -.006 | -.010 | .567 | 262.0 | .644 | -.043 | .012 | .463 | 322.0 | .505 | -.027 | .011 | .526 |
| 204.0 | .352 | -.006 | -.008 | .562 | 264.0 | .647 | -.044 | .015 | .462 | 324.0 | .496 | -.026 | .012 | .531 |
| 206.0 | .367 | -.008 | -.007 | .556 | 266.0 | .654 | -.045 | .015 | .462 | 326.0 | .495 | -.026 | .012 | .536 |
| 208.0 | .380 | -.009 | -.007 | .551 | 268.0 | .656 | -.046 | .016 | .461 | 328.0 | .491 | -.025 | .011 | .541 |
| 210.0 | .392 | -.010 | -.007 | .546 | 270.0 | .664 | -.048 | .016 | .461 | 330.0 | .492 | -.024 | .011 | .546 |
| 212.0 | .408 | -.011 | -.007 | .541 | 272.0 | .666 | -.048 | .020 | .461 | 332.0 | .481 | -.024 | .013 | .551 |
| 214.0 | .416 | -.013 | -.005 | .536 | 274.0 | .670 | -.049 | .020 | .462 | 334.0 | .476 | -.024 | .013 | .556 |
| 216.0 | .435 | -.014 | -.003 | .531 | 276.0 | .570 | -.049 | .020 | .462 | 336.0 | .473 | -.024 | .013 | .561 |
| 218.0 | .447 | -.016 | -.003 | .526 | 278.0 | .677 | -.052 | .024 | .463 | 338.0 | .471 | -.024 | .014 | .567 |
| 220.0 | .462 | -.018 | -.002 | .522 | 280.0 | .692 | -.052 | .022 | .464 | 340.0 | .482 | -.023 | .014 | .572 |
| 222.0 | .479 | -.019 | -.002 | .517 | 282.0 | .705 | -.052 | .022 | .465 | 342.0 | .497 | -.023 | .014 | .578 |
| 224.0 | .488 | -.021 | -.000 | .513 | 284.0 | .718 | -.054 | .025 | .466 | 344.0 | .493 | -.023 | .014 | .584 |
| 226.0 | .500 | -.023 | .002 | .509 | 286.0 | .752 | -.058 | .025 | .468 | 346.0 | .482 | -.023 | .014 | .589 |
| 228.0 | .514 | -.024 | .002 | .505 | 288.0 | .776 | -.065 | .028 | .470 | 348.0 | .476 | -.023 | .015 | .595 |
| 230.0 | .526 | -.026 | .003 | .501 | 290.0 | .799 | -.074 | .033 | .471 | 350.0 | .463 | -.022 | .015 | .601 |
| 232.0 | .540 | -.027 | .002 | .497 | 292.0 | .797 | -.078 | .036 | .474 | 352.0 | .436 | -.020 | .013 | .607 |
| 234.0 | .556 | -.029 | .003 | .494 | 294.0 | .748 | -.073 | .036 | .476 | 354.0 | .415 | -.017 | .009 | .612 |
| 236.0 | .565 | -.031 | .005 | .490 | 296.0 | .679 | -.064 | .034 | .478 | 356.0 | .387 | -.014 | .007 | .618 |
| 238.0 | .574 | -.033 | .007 | .487 | 298.0 | .620 | -.054 | .028 | .481 | 358.0 | .357 | -.011 | .006 | .624 |

FLT 65 RUN18

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS    NASA-LANGLEY AH-1G    78/11/15.

FLT 65 RUN 25    TIME 55583.000    RN/M= 16.14 MILLION    ROTOR SPEED= 34.2684 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .283 | -.005 | .007 | .624 | 60.0 | .214 | .004 | -.005 | .769 | 120.0 | .121 | .001 | -.015 | .769 |
| 2.0 | .269 | -.004 | .005 | .630 | 62.0 | .222 | .004 | -.007 | .772 | 122.0 | .123 | .001 | -.016 | .766 |
| 4.0 | .253 | -.003 | .004 | .636 | 64.0 | .222 | .004 | -.007 | .774 | 124.0 | .120 | .001 | -.015 | .763 |
| 6.0 | .245 | -.002 | .002 | .642 | 66.0 | .222 | .004 | -.007 | .777 | 126.0 | .117 | .001 | -.015 | .759 |
| 8.0 | .239 | -.001 | .001 | .647 | 68.0 | .225 | .004 | -.007 | .779 | 128.0 | .118 | .002 | -.016 | .756 |
| 10.0 | .233 | -.001 | -.000 | .653 | 70.0 | .235 | .004 | -.007 | .781 | 130.0 | .117 | .002 | -.016 | .752 |
| 12.0 | .224 | -.000 | -.000 | .659 | 72.0 | .245 | .004 | -.007 | .783 | 132.0 | .121 | .002 | -.016 | .748 |
| 14.0 | .219 | .000 | .000 | .665 | 74.0 | .254 | .004 | -.006 | .785 | 134.0 | .119 | .002 | -.016 | .744 |
| 16.0 | .217 | .001 | -.001 | .670 | 76.0 | .259 | .004 | -.005 | .786 | 136.0 | .119 | .001 | -.015 | .740 |
| 18.0 | .211 | .001 | -.001 | .676 | 78.0 | .259 | .004 | -.004 | .787 | 138.0 | .115 | .001 | -.015 | .736 |
| 20.0 | .203 | .001 | -.000 | .681 | 80.0 | .256 | .004 | -.003 | .789 | 140.0 | .110 | .001 | -.014 | .732 |
| 22.0 | .192 | .001 | -.002 | .687 | 82.0 | .249 | .004 | -.003 | .789 | 142.0 | .114 | .002 | -.015 | .727 |
| 24.0 | .188 | .002 | -.003 | .692 | 84.0 | .241 | .004 | -.003 | .790 | 144.0 | .115 | .002 | -.015 | .722 |
| 26.0 | .179 | .002 | -.002 | .697 | 86.0 | .232 | .004 | -.004 | .791 | 146.0 | .116 | .002 | -.013 | .718 |
| 28.0 | .174 | .002 | -.001 | .703 | 88.0 | .225 | .004 | -.004 | .791 | 148.0 | .120 | .001 | -.014 | .713 |
| 30.0 | .175 | .002 | -.003 | .708 | 90.0 | .218 | .003 | -.004 | .791 | 150.0 | .122 | .002 | -.016 | .708 |
| 32.0 | .166 | .002 | -.003 | .713 | 92.0 | .213 | .003 | -.006 | .791 | 152.0 | .124 | .002 | -.015 | .703 |
| 34.0 | .166 | .002 | -.004 | .718 | 94.0 | .210 | .003 | -.007 | .791 | 154.0 | .124 | .002 | -.013 | .697 |
| 36.0 | .164 | .002 | -.004 | .722 | 96.0 | .207 | .003 | -.009 | .790 | 156.0 | .124 | .002 | -.012 | .692 |
| 38.0 | .157 | .002 | -.003 | .727 | 98.0 | .202 | .003 | -.009 | .789 | 158.0 | .129 | .002 | -.013 | .687 |
| 40.0 | .156 | .003 | -.004 | .731 | 100.0 | .200 | .003 | -.010 | .789 | 160.0 | .135 | .002 | -.014 | .681 |
| 42.0 | .156 | .003 | -.004 | .736 | 102.0 | .198 | .003 | -.011 | .787 | 162.0 | .140 | .002 | -.015 | .676 |
| 44.0 | .150 | .003 | -.006 | .740 | 104.0 | .198 | .003 | -.011 | .786 | 164.0 | .144 | .002 | -.015 | .670 |
| 46.0 | .145 | .003 | -.007 | .744 | 106.0 | .193 | .002 | -.012 | .785 | 166.0 | .148 | .002 | -.015 | .665 |
| 48.0 | .156 | .003 | -.008 | .748 | 108.0 | .187 | .002 | -.012 | .783 | 168.0 | .152 | .002 | -.014 | .659 |
| 50.0 | .175 | .004 | -.010 | .752 | 110.0 | .172 | .002 | -.012 | .781 | 170.0 | .160 | .002 | -.015 | .653 |
| 52.0 | .189 | .004 | -.010 | .756 | 112.0 | .159 | .002 | -.013 | .779 | 172.0 | .169 | .002 | -.015 | .648 |
| 54.0 | .199 | .004 | -.008 | .759 | 114.0 | .141 | .002 | -.014 | .777 | 174.0 | .178 | .002 | -.014 | .642 |
| 56.0 | .207 | .004 | -.007 | .763 | 116.0 | .129 | .001 | -.014 | .774 | 176.0 | .183 | .002 | -.014 | .636 |
| 58.0 | .211 | .004 | -.005 | .766 | 118.0 | .125 | .001 | -.014 | .772 | 178.0 | .188 | .002 | -.012 | .630 |

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/15.

FLT 65 RUN 25 TIME 55583.000 RN/M= 16.14 MILLION ROTOR SPEED= 34.2684 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 180.0 | .195 | .001 | -.011 | .624 | 240.0 | .540 | -.032 | .009 | .480 | 300.0 | .489 | -.033 | .021 | .480 |
| 182.0 | .207 | .001 | -.013 | .619 | 242.0 | .550 | -.033 | .011 | .477 | 302.0 | .432 | -.028 | .024 | .483 |
| 184.0 | .220 | .001 | -.013 | .613 | 244.0 | .557 | -.035 | .013 | .474 | 304.0 | .398 | -.022 | .020 | .486 |
| 186.0 | .228 | .000 | -.013 | .607 | 246.0 | .563 | -.036 | .014 | .472 | 306.0 | .386 | -.018 | .016 | .489 |
| 188.0 | .239 | .000 | -.012 | .601 | 248.0 | .561 | -.037 | .017 | .470 | 308.0 | .388 | -.017 | .010 | .493 |
| 190.0 | .257 | -.000 | -.013 | .595 | 250.0 | .563 | -.038 | .016 | .467 | 310.0 | .391 | -.015 | .006 | .496 |
| 192.0 | .261 | -.001 | -.010 | .590 | 252.0 | .565 | -.038 | .017 | .466 | 312.0 | .397 | -.014 | .005 | .500 |
| 194.0 | .267 | -.002 | -.009 | .584 | 254.0 | .568 | -.039 | .017 | .464 | 314.0 | .396 | -.014 | .004 | .504 |
| 196.0 | .277 | -.003 | -.009 | .578 | 256.0 | .580 | -.040 | .013 | .462 | 316.0 | .385 | -.014 | .009 | .508 |
| 198.0 | .293 | -.003 | -.009 | .573 | 258.0 | .580 | -.040 | .016 | .461 | 318.0 | .388 | -.015 | .010 | .512 |
| 200.0 | .302 | -.004 | -.009 | .567 | 260.0 | .581 | -.039 | .017 | .460 | 320.0 | .380 | -.015 | .013 | .517 |
| 202.0 | .315 | -.005 | -.008 | .562 | 262.0 | .588 | -.040 | .015 | .459 | 322.0 | .368 | -.014 | .014 | .521 |
| 204.0 | .326 | -.005 | -.009 | .556 | 264.0 | .584 | -.040 | .018 | .458 | 324.0 | .359 | -.014 | .013 | .526 |
| 206.0 | .344 | -.007 | -.009 | .551 | 266.0 | .585 | -.040 | .018 | .458 | 326.0 | .361 | -.014 | .013 | .531 |
| 208.0 | .360 | -.008 | -.008 | .546 | 268.0 | .580 | -.040 | .019 | .457 | 328.0 | .361 | -.014 | .012 | .536 |
| 210.0 | .369 | -.009 | -.006 | .541 | 270.0 | .580 | -.040 | .018 | .457 | 330.0 | .360 | -.013 | .012 | .541 |
| 212.0 | .386 | -.010 | -.006 | .536 | 272.0 | .580 | -.040 | .018 | .457 | 332.0 | .359 | -.013 | .011 | .546 |
| 214.0 | .403 | -.011 | -.006 | .531 | 274.0 | .585 | -.040 | .019 | .458 | 334.0 | .355 | -.012 | .011 | .551 |
| 216.0 | .408 | -.013 | -.004 | .526 | 276.0 | .580 | -.040 | .020 | .458 | 336.0 | .350 | -.012 | .013 | .556 |
| 218.0 | .420 | -.014 | -.003 | .522 | 278.0 | .578 | -.040 | .019 | .459 | 338.0 | .348 | -.012 | .013 | .562 |
| 220.0 | .435 | -.016 | -.001 | .517 | 280.0 | .588 | -.040 | .017 | .460 | 340.0 | .351 | -.011 | .012 | .567 |
| 222.0 | .444 | -.017 | .000 | .513 | 282.0 | .589 | -.041 | .020 | .461 | 342.0 | .354 | -.011 | .011 | .572 |
| 224.0 | .450 | -.018 | .003 | .508 | 284.0 | .595 | -.041 | .020 | .462 | 344.0 | .355 | -.011 | .011 | .578 |
| 226.0 | .464 | -.020 | .005 | .504 | 286.0 | .594 | -.041 | .020 | .464 | 346.0 | .353 | -.011 | .011 | .584 |
| 228.0 | .488 | -.022 | .001 | .500 | 288.0 | .595 | -.041 | .022 | .465 | 348.0 | .357 | -.011 | .011 | .589 |
| 230.0 | .498 | -.024 | .004 | .496 | 290.0 | .594 | -.042 | .024 | .467 | 350.0 | .358 | -.011 | .011 | .595 |
| 232.0 | .509 | -.025 | .006 | .493 | 292.0 | .601 | -.043 | .025 | .469 | 352.0 | .355 | -.011 | .010 | .601 |
| 234.0 | .515 | -.027 | .009 | .489 | 294.0 | .594 | -.043 | .026 | .472 | 354.0 | .338 | -.010 | .009 | .607 |
| 236.0 | .524 | -.028 | .009 | .486 | 296.0 | .579 | -.041 | .023 | .474 | 356.0 | .317 | -.008 | .007 | .612 |
| 238.0 | .532 | -.030 | .010 | .483 | 298.0 | .542 | -.037 | .022 | .477 | 358.0 | .288 | -.006 | .007 | .618 |

FLT 65 RUN25

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/27.

FLT 66 RUN 22 TIME 55789.850 RN/M= 16.37 MILLION ROTOR SPEED= 35.2791 RAD/SEC

| AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M | AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | .471 | -.024 | .007 | .646 | 60.0 | .350 | .003 | -.003 | .798 | 120.0 | .236 | .002 | -.005 | .798 |
| 2.0 | .452 | -.019 | .002 | .652 | 62.0 | .349 | .003 | -.003 | .801 | 122.0 | .245 | .002 | -.005 | .795 |
| 4.0 | .430 | -.016 | -.002 | .659 | 64.0 | .350 | .003 | -.003 | .804 | 124.0 | .258 | .002 | -.006 | .792 |
| 6.0 | .400 | -.012 | -.003 | .665 | 66.0 | .347 | .003 | -.001 | .807 | 126.0 | .273 | .002 | -.008 | .788 |
| 8.0 | .381 | -.010 | -.002 | .671 | 68.0 | .342 | .003 | .002 | .809 | 128.0 | .285 | .002 | -.009 | .785 |
| 10.0 | .371 | -.008 | -.003 | .677 | 70.0 | .338 | .003 | .003 | .811 | 130.0 | .295 | .001 | -.009 | .781 |
| 12.0 | .360 | -.008 | -.003 | .683 | 72.0 | .330 | .003 | .005 | .813 | 132.0 | .309 | .001 | -.009 | .777 |
| 14.0 | .367 | -.007 | -.004 | .689 | 74.0 | .322 | .003 | .006 | .815 | 134.0 | .322 | .001 | -.010 | .773 |
| 16.0 | .378 | -.007 | -.004 | .695 | 76.0 | .317 | .003 | .005 | .817 | 136.0 | .333 | .000 | -.010 | .768 |
| 18.0 | .378 | -.007 | -.003 | .701 | 78.0 | .315 | .003 | .004 | .818 | 138.0 | .345 | -.000 | -.010 | .764 |
| 20.0 | .370 | -.007 | -.002 | .706 | 80.0 | .310 | .003 | .004 | .819 | 140.0 | .357 | -.001 | -.010 | .759 |
| 22.0 | .359 | -.006 | .000 | .712 | 82.0 | .304 | .004 | .003 | .820 | 142.0 | .366 | -.002 | -.011 | .755 |
| 24.0 | .352 | -.005 | .002 | .718 | 84.0 | .302 | .004 | .002 | .821 | 144.0 | .363 | -.002 | -.010 | .750 |
| 26.0 | .352 | -.004 | .001 | .723 | 86.0 | .302 | .004 | -.001 | .821 | 146.0 | .353 | -.003 | -.008 | .745 |
| 28.0 | .347 | -.003 | .002 | .729 | 88.0 | .302 | .004 | -.003 | .822 | 148.0 | .342 | -.003 | -.008 | .739 |
| 30.0 | .346 | -.002 | -.000 | .734 | 90.0 | .302 | .004 | -.005 | .822 | 150.0 | .334 | -.004 | -.007 | .734 |
| 32.0 | .347 | -.002 | -.002 | .739 | 92.0 | .305 | .005 | -.008 | .822 | 152.0 | .325 | -.005 | -.007 | .729 |
| 34.0 | .356 | -.001 | -.005 | .745 | 94.0 | .308 | .005 | -.011 | .821 | 154.0 | .320 | -.006 | -.006 | .723 |
| 36.0 | .365 | -.001 | -.006 | .750 | 96.0 | .305 | .005 | -.013 | .821 | 156.0 | .320 | -.006 | -.005 | .718 |
| 38.0 | .376 | -.001 | -.006 | .754 | 98.0 | .300 | .004 | -.013 | .820 | 158.0 | .325 | -.007 | -.006 | .712 |
| 40.0 | .381 | -.001 | -.005 | .759 | 100.0 | .291 | .004 | -.012 | .819 | 160.0 | .332 | -.007 | -.006 | .706 |
| 42.0 | .390 | -.000 | -.005 | .764 | 102.0 | .278 | .004 | -.012 | .818 | 162.0 | .338 | -.008 | -.006 | .701 |
| 44.0 | .392 | -.000 | -.005 | .768 | 104.0 | .264 | .004 | -.011 | .817 | 164.0 | .345 | -.009 | -.007 | .695 |
| 46.0 | .392 | .000 | -.004 | .773 | 106.0 | .251 | .003 | -.010 | .815 | 166.0 | .353 | -.009 | -.006 | .689 |
| 48.0 | .380 | .001 | -.002 | .777 | 108.0 | .241 | .003 | -.008 | .813 | 168.0 | .353 | -.009 | -.007 | .683 |
| 50.0 | .370 | .001 | -.002 | .781 | 110.0 | .230 | .003 | -.006 | .811 | 170.0 | .355 | -.008 | -.008 | .677 |
| 52.0 | .361 | .002 | -.002 | .785 | 112.0 | .226 | .003 | -.006 | .809 | 172.0 | .360 | -.008 | -.009 | .671 |
| 54.0 | .359 | .002 | -.003 | .788 | 114.0 | .225 | .002 | -.006 | .807 | 174.0 | .367 | -.007 | -.009 | .665 |
| 56.0 | .355 | .002 | -.003 | .792 | 116.0 | .224 | .002 | -.004 | .804 | 176.0 | .374 | -.007 | -.010 | .659 |
| 58.0 | .352 | .003 | -.003 | .795 | 118.0 | .229 | .002 | -.004 | .801 | 178.0 | .379 | -.008 | -.011 | .653 |

FLT 66 RUN22

AIRFOIL COEFFICIENT DATA .9 BLADE RADIUS NASA-LANGLEY AH-1G 78/11/27.

FLT 66 RUN 22 TIME 55789.850 RN/M= 16.37 MILLION ROTOR SPEED= 35.2791 RAD/SEC

| AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|
| 180.0 | .379 | -.008 | -.010 | .646 |
| 182.0 | .380 | -.009 | -.008 | .640 |
| 184.0 | .388 | -.009 | -.006 | .634 |
| 186.0 | .398 | -.010 | -.009 | .628 |
| 188.0 | .409 | -.010 | -.008 | .622 |
| 190.0 | .420 | -.012 | -.009 | .616 |
| 192.0 | .427 | -.013 | -.007 | .610 |
| 194.0 | .435 | -.013 | -.007 | .604 |
| 196.0 | .440 | -.015 | -.007 | .598 |
| 198.0 | .444 | -.016 | -.005 | .592 |
| 200.0 | .452 | -.016 | -.005 | .586 |
| 202.0 | .459 | -.017 | -.005 | .581 |
| 204.0 | .465 | -.018 | -.005 | .575 |
| 206.0 | .476 | -.018 | -.005 | .570 |
| 208.0 | .482 | -.020 | -.004 | .564 |
| 210.0 | .486 | -.021 | -.004 | .559 |
| 212.0 | .495 | -.022 | -.003 | .553 |
| 214.0 | .507 | -.023 | -.004 | .548 |
| 216.0 | .508 | -.023 | -.004 | .543 |
| 218.0 | .523 | -.024 | -.004 | .538 |
| 220.0 | .533 | -.025 | -.004 | .534 |
| 222.0 | .537 | -.026 | -.003 | .529 |
| 224.0 | .547 | -.027 | -.002 | .524 |
| 226.0 | .562 | -.027 | -.004 | .520 |
| 228.0 | .574 | -.029 | -.006 | .516 |
| 230.0 | .577 | -.030 | -.004 | .512 |
| 232.0 | .579 | -.031 | -.003 | .508 |
| 234.0 | .590 | -.032 | -.005 | .504 |
| 236.0 | .601 | -.033 | -.004 | .501 |
| 238.0 | .601 | -.034 | -.002 | .498 |

| AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|
| 240.0 | .607 | -.035 | -.001 | .494 |
| 242.0 | .617 | -.036 | .001 | .491 |
| 244.0 | .631 | -.037 | -.002 | .489 |
| 246.0 | .634 | -.038 | -.001 | .486 |
| 248.0 | .641 | -.038 | -.001 | .484 |
| 250.0 | .647 | -.039 | -.001 | .481 |
| 252.0 | .652 | -.040 | -.001 | .479 |
| 254.0 | .654 | -.040 | .001 | .478 |
| 256.0 | .658 | -.041 | .001 | .476 |
| 258.0 | .665 | -.041 | .002 | .475 |
| 260.0 | .673 | -.041 | .001 | .473 |
| 262.0 | .682 | -.042 | .000 | .473 |
| 264.0 | .697 | -.043 | -.001 | .472 |
| 266.0 | .698 | -.044 | .001 | .471 |
| 268.0 | .705 | -.045 | .002 | .471 |
| 270.0 | .714 | -.045 | .001 | .471 |
| 272.0 | .719 | -.046 | .001 | .471 |
| 274.0 | .729 | -.048 | .004 | .471 |
| 276.0 | .734 | -.049 | .006 | .472 |
| 278.0 | .739 | -.050 | .008 | .472 |
| 280.0 | .752 | -.051 | .008 | .473 |
| 282.0 | .758 | -.052 | .009 | .475 |
| 284.0 | .762 | -.053 | .010 | .476 |
| 286.0 | .760 | -.053 | .010 | .478 |
| 288.0 | .771 | -.053 | .011 | .479 |
| 290.0 | .778 | -.054 | .011 | .481 |
| 292.0 | .778 | -.054 | .012 | .484 |
| 294.0 | .780 | -.054 | .011 | .486 |
| 296.0 | .773 | -.054 | .011 | .488 |
| 298.0 | .764 | -.053 | .008 | .491 |

| AZIMUTH | CN | CC | CM | M |
|---|---|---|---|---|
| 300.0 | .753 | -.052 | .008 | .494 |
| 302.0 | .746 | -.051 | .007 | .497 |
| 304.0 | .739 | -.049 | .005 | .501 |
| 306.0 | .731 | -.048 | .003 | .504 |
| 308.0 | .712 | -.046 | .005 | .508 |
| 310.0 | .700 | -.044 | .006 | .512 |
| 312.0 | .696 | -.044 | .005 | .516 |
| 314.0 | .688 | -.043 | .005 | .520 |
| 316.0 | .688 | -.042 | .002 | .524 |
| 318.0 | .687 | -.042 | .001 | .529 |
| 320.0 | .679 | -.041 | .001 | .533 |
| 322.0 | .677 | -.041 | .001 | .538 |
| 324.0 | .675 | -.041 | .002 | .543 |
| 326.0 | .666 | -.040 | .005 | .548 |
| 328.0 | .672 | -.039 | .003 | .553 |
| 330.0 | .670 | -.038 | .004 | .558 |
| 332.0 | .660 | -.038 | .006 | .564 |
| 334.0 | .650 | -.038 | .007 | .569 |
| 336.0 | .650 | -.038 | .008 | .575 |
| 338.0 | .650 | -.039 | .009 | .580 |
| 340.0 | .650 | -.040 | .013 | .586 |
| 342.0 | .657 | -.041 | .015 | .592 |
| 344.0 | .675 | -.041 | .016 | .598 |
| 346.0 | .699 | -.041 | .016 | .604 |
| 348.0 | .727 | -.041 | .018 | .610 |
| 350.0 | .726 | -.041 | .019 | .616 |
| 352.0 | .696 | -.040 | .020 | .622 |
| 354.0 | .646 | -.038 | .021 | .628 |
| 356.0 | .589 | -.036 | .020 | .634 |
| 358.0 | .548 | -.033 | .017 | .640 |

## APPENDIX F. - THEORETICAL AIRFOIL PRESSURE DISTRIBUTIONS

Theoretical distributions of airfoil pressure coefficients were generated by utilizing the transonic-flow analysis of reference 35. This computer program uses a relaxation scheme around a conformally mapped representation of a "fluid" airfoil. That airfoil consists of a specified geometric shape and turbulent boundary layer that grows from a specified chordwise location on each airfoil surface. The program can predict transonic flow patterns and effects but cannot handle either separation or laminar flow. More details about the program are available in references 40 and 41.

Four primary input parameters were required for each flow condition. The Mach number was the value for the flow component normal to the blade leading edge. The normal-force coefficient of the flight data was input as a close approximation of lift coefficient. The two transition points (specifying the start of the boundary layer) were determined based on the estimates plotted in figure 55. Unless otherwise specified, the input airfoil coordinates were the set of reference 4 modified for the trailing-edge truncation.

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TABLE I.- BASIC AIRCRAFT CHARACTERISTICS

| | |
|---|---|
| Empty weight, N (lb.) | 28,130 (6323) |
| Fuel capacity, N (lb.) | 7,250 (1630) |
| Powerplant | Lycoming T53-L-13B |
| Nominal transmission limit at 100% rpm, kW (hp) | 820 (1100) |
| **Wing:** | |
| Airfoil | |
| Root | NACA 0030 |
| Tip | NACA 0024 |
| Semispan (panel only), m (ft) | 1.09 (3.56) |
| Area (panels only), $m^2$ ($ft^2$) | 1.63 (17.6) |
| Chord: | |
| Root, m (ft) | 0.88 (2.89) |
| Tip, m (ft) | 0.62 (2.04) |
| Incidence angle (chord line), deg | 14.0 |
| Leading-edge sweep, deg | 15.2 |
| Dihedral angle, deg | 0.0 |
| **Horizontal tail:** | |
| Airfoil | inverted Clark Y |
| Semispan (panel only), m (ft) | 0.78 (2.54) |
| Area (panels only), $m^2$ ($ft^2$) | 0.95 (10.2) |
| Chord: | |
| Root, m (ft) | 0.75 (2.45) |
| Tip, m (ft) | 0.54 (1.78) |
| Leading-edge sweep, deg | 19.9 |
| Dihedral angle, deg | 0.0 |
| **Vertical tail:** | |
| Airfoil | |
| Root | cambered, 14% thick |
| Tip | cambered, 15% thick |
| Span (above tail boom), m (ft) | 1.64 (5.38) |
| Area, $m^2$ ($ft^2$) | 1.73 (18.6) |
| Chord: | |
| Root, m (ft) | 1.42 (4.67) |
| Tip, m (ft) | .69 (2.25) |
| Leading-edge sweep, deg | 50.0 |
| Twist, deg | nonlinear |

TABLE I.- Concluded

| | |
|---|---|
| Main rotor: | |
| Number of blades | 2 |
| Airfoil | NLR-1T |
| Radius (R), m (ft) | 6.706 (22.0) |
| Chord, m (ft) | 0.686 (2.25) |
| Taper | 1:1 |
| Solidity | 0.0651 |
| Twist, deg | -10/R |
| Flapwise inertia, kg-$m^2$ (slug-$ft^2$) | 2120 (1560) |
| Lock number | 5.05 |
| Nominal tip speed, m/sec (ft/sec) | 227.5 (746.6) |
| Hub precone angle, deg | 2.75 |
| Pitch-flap coupling ($\delta_3$), deg | 0.0 |
| Blade pitch range at .75 R, deg | -12.3, +39.6 |
| Trim tab - | |
| Width, m (ft) | 0.191 (0.75) |
| Overhang length, m (ft) | 0.042 (0.138) |
| In-board edge | 0.761 R |
| Tail rotor: | |
| Number of blades | 2 |
| Airfoil | |
| .25 tail-rotor radius | NACA 0018 |
| tip | cambered, 8% thick |
| Radius | 1.295 (4.25) |
| Chord, m (ft) | 0.292 (0.96) |
| Taper | 1:1 |
| Solidity | 0.144 |
| Twist, deg | 0.0 |
| Equivalent root cut-out | 35 |
| Nominal tip speed, m/sec (ft/sec) | 227.5 (746.4) |
| Blade pitch range, $deg^3$ | -14.7, +15.3 |
| Hub precone angle, deg | $1^o$ |
| Pitch-flap coupling ($\delta_3$), deg | $30^o$ |

TABLE II.- COORDINATES OF NLR-1T AIRFOIL

| $x/c$ | $y_u/c$ | $y_\ell/c$ |
|---|---|---|
| 0.00 | 0.00 | 0.00 |
| .00259 | .00704 | -.00512 |
| .00974 | .01524 | -.00867 |
| .02185 | .02296 | -.01180 |
| .03796 | .02972 | -.01465 |
| .05675 | .03588 | -.01713 |
| .07753 | .04098 | -.01929 |
| .09845 | .04469 | -.02112 |
| .12341 | .04741 | -.02299 |
| .15412 | .04986 | -.02494 |
| .18767 | .05188 | -.02671 |
| .22313 | .05345 | -.02821 |
| .26054 | .05459 | -.02944 |
| .29979 | .05531 | -.03040 |
| .34064 | .05565 | -.03104 |
| .38269 | .05560 | -.03142 |
| .42528 | .05518 | -.03150 |
| .46849 | .05438 | -.03132 |
| .51162 | .05323 | -.03080 |
| .55383 | .05175 | -.02992 |
| .59596 | .04992 | -.02867 |
| .63728 | .04774 | -.02734 |
| .67732 | .04524 | -.02580 |
| .71079 | .04291 | -.02432 |
| .73905 | .04017 | -.02305 |
| .76946 | .03644 | -.02164 |
| .80263 | .03140 | -.01996 |
| .84055 | .02533 | -.01794 |
| .87846 | .01901 | -.01571 |
| .90845 | .01421 | -.01364 |
| .93589 | .01020 | -.01087 |
| .96199 | .00651 | -.00711 |
| 1.00000 | .00104 | -.00104 |

TABLE III.- PADS-PCM DATA SYSTEM CHARACTERISTICS

| Parameter | System Accuracy (a) | Digital Channel Precision | Filter (b) Frequency |
|---|---|---|---|
| Aerodynamic Flight State: | | | |
| dynamic pressure - regular | 70 Pa | 14 Pa | 1 Hz |
| - sensitive | 14 Pa | 3 Pa | — |
| static pressure - regular | 500 Pa | 200 Pa | — |
| - sensitive | 70 Pa | 40 Pa | |
| angle of attack | $.1^{o}$ | $.18^{o}$ | 10 Hz |
| angle of sideslip | $.1^{o}$ | $.18^{o}$ | 10 Hz |
| total temperature | $.06^{o}$C | $.1^{o}$C | — |
| Inertial Flight State: | | | |
| roll attitude | $.5^{o}$ | $.36^{o}$ | — |
| pitch attitude | $.5^{o}$ | $.18^{o}$ | — |
| heading | $3.0^{o}$ | $.72^{o}$ | — |
| angular rates | .01 rad/sec | .044 rad/sec | 10 Hz |
| longitudinal acceleration | .001 g | .004 g | 10 Hz |
| lateral acceleration | .001 g | .003 g | 10 Hz |
| normal acceleration | .005 g | .009 g | 10 Hz |
| Control Positions: | | | |
| lateral servo | $.1^{o}$ | $.04^{o}$ | 10 Hz |
| longitudinal servo | $.1^{o}$ | $.07^{o}$ | 10 Hz |
| collective servo | $.1^{o}$ | $.05^{o}$ | 10 Hz |
| horizontal fin | $.1^{o}$ | $.02^{o}$ | 10 Hz |
| pedal position | $.16^{o}$ | $.07^{o}$ | 10 Hz |
| tail-rotor collective | $.1^{o}$ | $.07^{o}$ | 10 Hz |
| Rotor/Engine Parameters: | | | |
| main-rotor speed - regular | .5% | .23% | — |
| -sensitive | .1% | .05% | — |
| main-rotor azimuth | $1^{o}$ | $22.5^{o}$ | — |
| engine torque pressure | 3 kPa | 1.3 kPa | — |
| fuel quantity | 60 | 40 | |

Notes: a - accuracy of analog signal before digitization

b - frequency at 3 db roll-off for constant delay, 4-pole Bessel Filters

TABLE IV. CHARACTERISTICS OF SELECTED ROTOR-DATA PARAMETERS

| Parameter | Analog System Accuracy | Digital Channel Precision | Maximum Final-Data Error |
|---|---|---|---|
| $Q$ | 122 N-m | 158 N-m | .60 kN-m |
| $T_b$ | - | $.40^{\circ}$ C | $1.0^{\circ}$ C |
| $\beta_s$ | $.1^{\circ}$ | $.11^{\circ}$ | $.3^{\circ}$ |
| $\theta_s$ | $.1^{\circ}$ | $.23^{\circ}$ | $.8^{\circ}$ |
| $\psi$ | - | $1.41^{\circ}$ | $.3^{\circ}$ |

TABLE V. - CHARACTERISTICS OF BLADE PRESSURE-DATA SYSTEM

| Surface | Orifice Location | | Precision[a] kPa | Maximum Final-Data Error[b] kPa | $f_{3db}$ Hz | Data reduction parameters[c] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $\frac{x}{c}$ | $\frac{y}{c}$ | | | | $\Delta m_{1,a}$ $\frac{Pa}{counts\text{-}C}$ | $\Delta m_{1,b}$ $\frac{Pa}{counts\text{-}C}$ | $\Delta p_{o,a}$ Pa/C | $\Delta p_{o,b}$ Pa/C | $\Delta\psi_d$ deg |
| Upper | .02 | .0215 | .408 | 2.04 | 130 | .21 | .21 | 75 | 22 | -2.35 |
| | .10 | .0449 | .392 | 1.73 | 112 | .43 | .49 | 90 | 26 | -2.71 |
| | .20 | .0525 | .330 | 1.43 | 80 | .32 | .34 | 106 | 140 | -3.73 |
| | .50 | .0536 | .339 | 1.48 | 173 | -.19 | -.21 | 52 | 46 | -1.77 |
| | .70 | .0438 | .367 | 1.20 | 164 | -.01 | .05 | -27 | -26 | -1.87 |
| | .80 | .0319 | .360 | 1.07 | 188 | -.21 | -.19 | 61 | -42 | -1.63 |
| | .90 | .0157 | .288 | 1.11 | 178 | .23 | .25 | 103 | 112 | -1.73 |
| Lower | .02 | -.0114 | .488 | 1.79 | 132 | .32 | .36 | 67 | 19 | -2.31 |
| | .10 | -.0212 | .396 | 1.59 | 128 | .22 | .55 | 85 | 31 | -2.38 |
| | .20 | -.0272 | .303 | 1.63 | 182 | .05 | .60 | 78 | 91 | -1.69 |
| | .50 | -.0309 | .272 | 1.17 | 160 | .19 | .18 | 35 | 3 | -1.92 |
| | .70 | -.0247 | .280 | 1.13 | 159 | .10 | .10 | 11 | -34 | -1.93 |
| | .90 | -.0142 | .320 | 1.19 | 188 | .03 | .08 | 20 | -44 | -1.63 |

Notes: a - increment per unit digital input

b - highly conservative value for absolute value of single data point

c - $\Delta p_t = (\Delta m_1 \Delta D + \Delta p_o)(T_b - 23.9)$

TABLE VI.- CATALOG OF FLIGHT TEST-POINT CONDITIONS

| Flight condition | Level flight -reference | Hover | Left turn | Right turn | Pull-up |
|---|---|---|---|---|---|
| Flight no. - Run no. | 65-15 | 61-26B | 65-18 | 65-25 | 66-22 |
| $\mu$ | 0.243 | 0.0 | 0.241 | 0.241 | 0.245 |
| V, knots | 107.9 | 0.0 | 108.9 | 107.5 | 112.5 |
| $M_h$ | 0.69 | 0.69 | 0.70 | 0.69 | 0.71 |
| $C_L'$ | 0.0037 | 0.0034 | 0.0062 | 0.0051 | 0.0075 |
| $n_z$, g units | 0.99 | 1.00 | 1.70 | 1.40 | 2.05 |
| $\alpha_f$, degrees | -2.8 | --- | 3.9 | -0.7 | 8.6 |
| $\phi_f$, degrees | -0.4 | -0.8 | -48.0 | 44.9 | -0.5 |
| $\theta_f$, degrees | -3.8 | 0.0 | -5.4 | -4.0 | -2.5 |
| $p_f$, rad/sec | 0.00 | 0.00 | -0.03 | 0.03 | 0.02 |
| $q_f$, rad/sec | 0.00 | 0.00 | 0.18 | 0.12 | 0.28 |
| $r_f$,rad/sec | 0.00 | -0.01 | -0.14 | 0.13 | 0.00 |
| $\dot{p}_f$, rad/sec$^2$ | 0.00 | -0.01 | 0.02 | 0.02 | -0.09 |
| $\dot{q}_f$, rad/sec$^2$ | -0.01 | -0.01 | -0.03 | 0.03 | -0.10 |
| $\dot{r}_f$, rad/sec$^2$ | 0.00 | 0.02 | -0.04 | -0.03 | -0.04 |
| $C_Q$ | 0.00022 | 0.00022 | 0.0014 | 0.00017 | 0.00009 |
| $A_{0s}$, degrees | 8.5 | 8.1 | 7.9 | 8.1 | 7.1 |
| $A_{1s}$, degrees | -0.1 | -1.5 | -0.3 | -0.2 | -0.2 |
| $B_{1s}$, degrees | 5.0 | -0.2 | 2.5 | 3.0 | 2.1 |
| $a_{1s}$, degrees | -1.4 | 0.1 | 0.1 | -0.1 | -0.2 |
| $b_{1s}$, degrees | 0.1 | -0.6 | 1.1 | 0.6 | 1.0 |
| $\Omega$, rad/sec | 34.07 | 34.02 | 34.59 | 34.27 | 35.28 |
| a, m/sec | 331.7 | 329.9 | 331.7 | 331.8 | 329.9 |

TABLE VI.- Concluded

| Flight condition | Level flight - speed sweep | | | | |
|---|---|---|---|---|---|
| Flight no. - Run no. | 63-1 | 63-6 | 63-9 | 63-10 | 63-11 |
| $\mu$ | 0.151 | 0.257 | 0.330 | 0.356 | 0.370 |
| $V$, knots | 67.5 | 114.2 | 146.4 | 158.3 | 164.5 |
| $M_h$ | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| $C_L'$ | 0.0042 | 0.0043 | 0.0044 | 0.0042 | 0.0043 |
| $n_z$, g units | 0.98 | 0.98 | 1.00 | 0.97 | 1.00 |
| $\alpha_f$, degrees | 0.4 | -2.9 | -4.7 | -6.1 | -6.5 |
| $\phi_f$, degrees | 0.0 | -0.7 | -0.4 | -1.3 | 0.1 |
| $\theta_f$, degrees | -1.5 | -3.1 | -6.1 | -7.4 | 7.6 |
| $p_f$, rad/sec | 0.00 | 0.00 | 0.00 | -0.01 | 0.01 |
| $q_f$ rad/sec | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| $r_f$,rad/sec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| $\dot{p}_f$, rad/sec$^2$ | 0.01 | 0.00 | 0.04 | -0.05 | -0.11 |
| $\dot{q}_f$, rad/sec$^2$ | 0.00 | -0.01 | 0.00 | 0.01 | 0.02 |
| $\dot{r}_f$, rad/sec$^2$ | 0.02 | 0.01 | -0.02 | 0.02 | 0.01 |
| $C_Q$ | 0.00015 | 0.00024 | 0.00035 | 0.00042 | 0.00047 |
| $A_{0s}$, degrees | 7.5 | 10.1 | 13.0 | 14.7 | 15.4 |
| $A_{1s}$, degrees | -1.0 | -0.3 | -0.3 | -1.1 | -0.7 |
| $B_{1s}$, degrees | 2.0 | 5.9 | 8.9 | 10.6 | 11.2 |
| $a_{1s}$, degrees | 0.0 | -1.2 | -1.8 | -2.4 | -2.4 |
| $b_{1s}$, degrees | 0.4 | 0.0 | -0.6 | -1.4 | -1.3 |
| $\Omega$, rad/sec | 34.20 | 34.03 | 34.08 | 34.08 | 34.07 |
| $a$, m/sec | 326.4 | 326.4 | 326.4 | 326.6 | 326.4 |

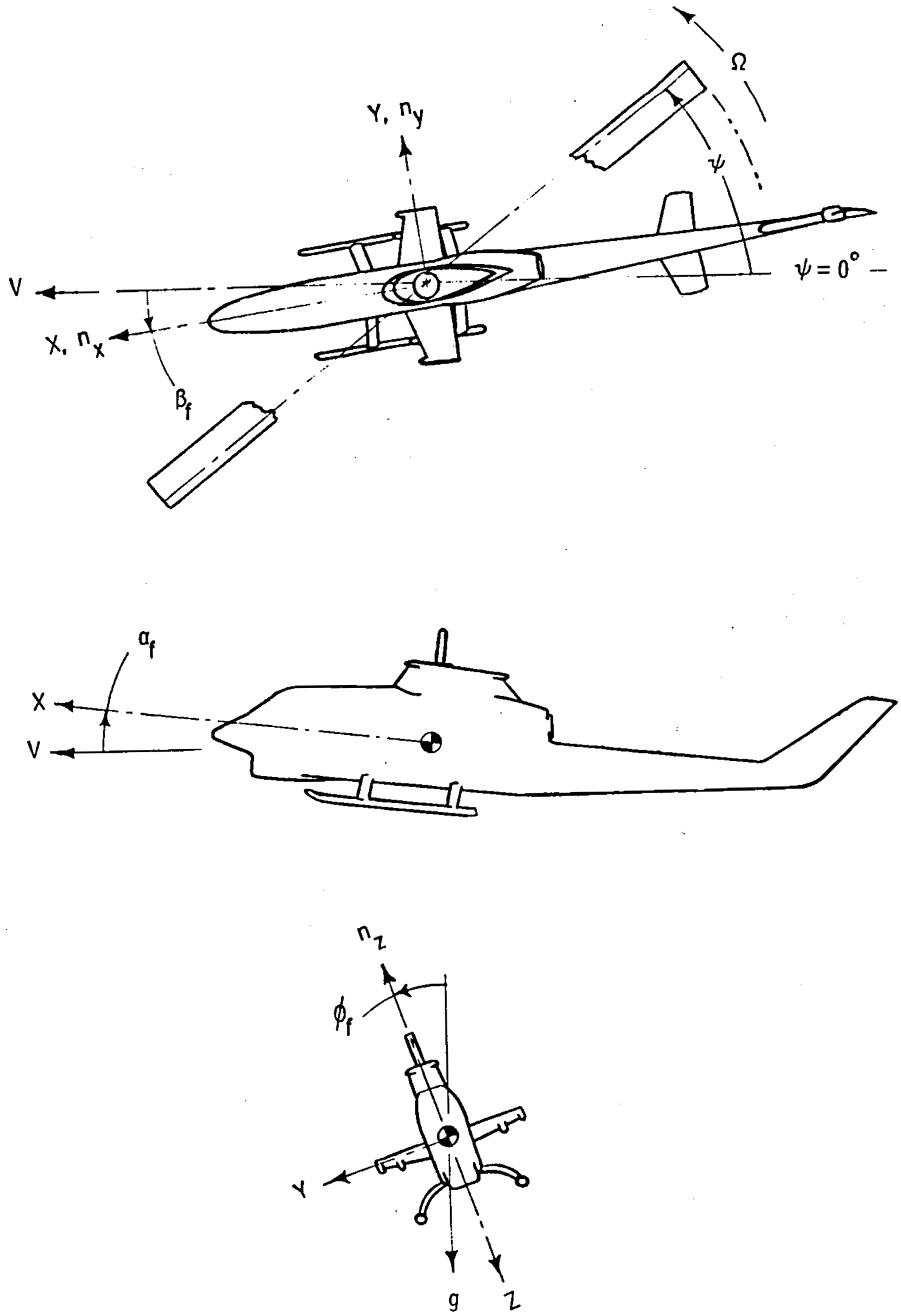



Figure 1.- Aircraft schematic and conventions used to define senses of axes, angles, and accelerations.

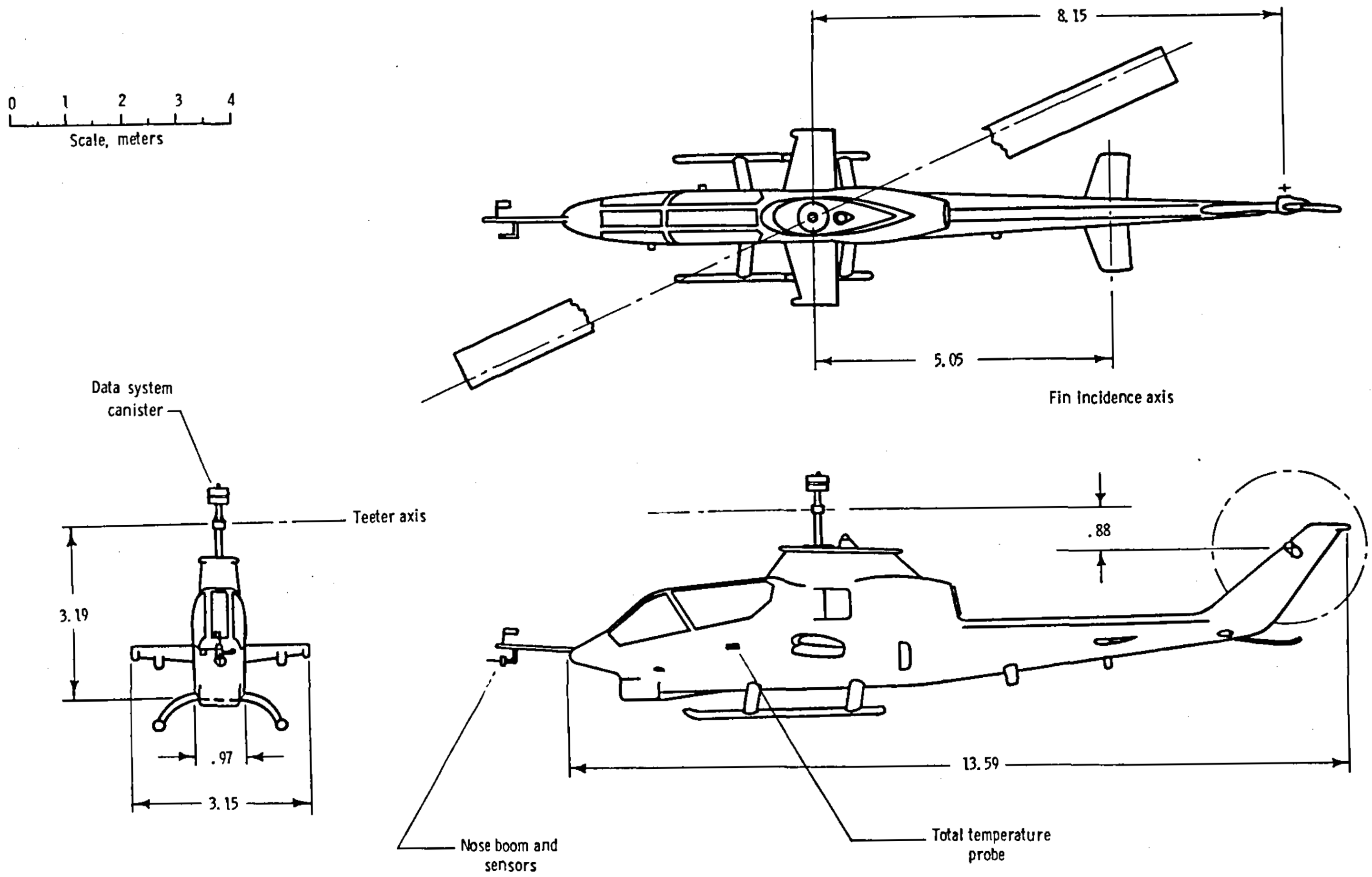



Figure 2.- Three-view scale drawing of aircraft. All dimensions are given in meters.


Figure 3.- Flight test vehicle.

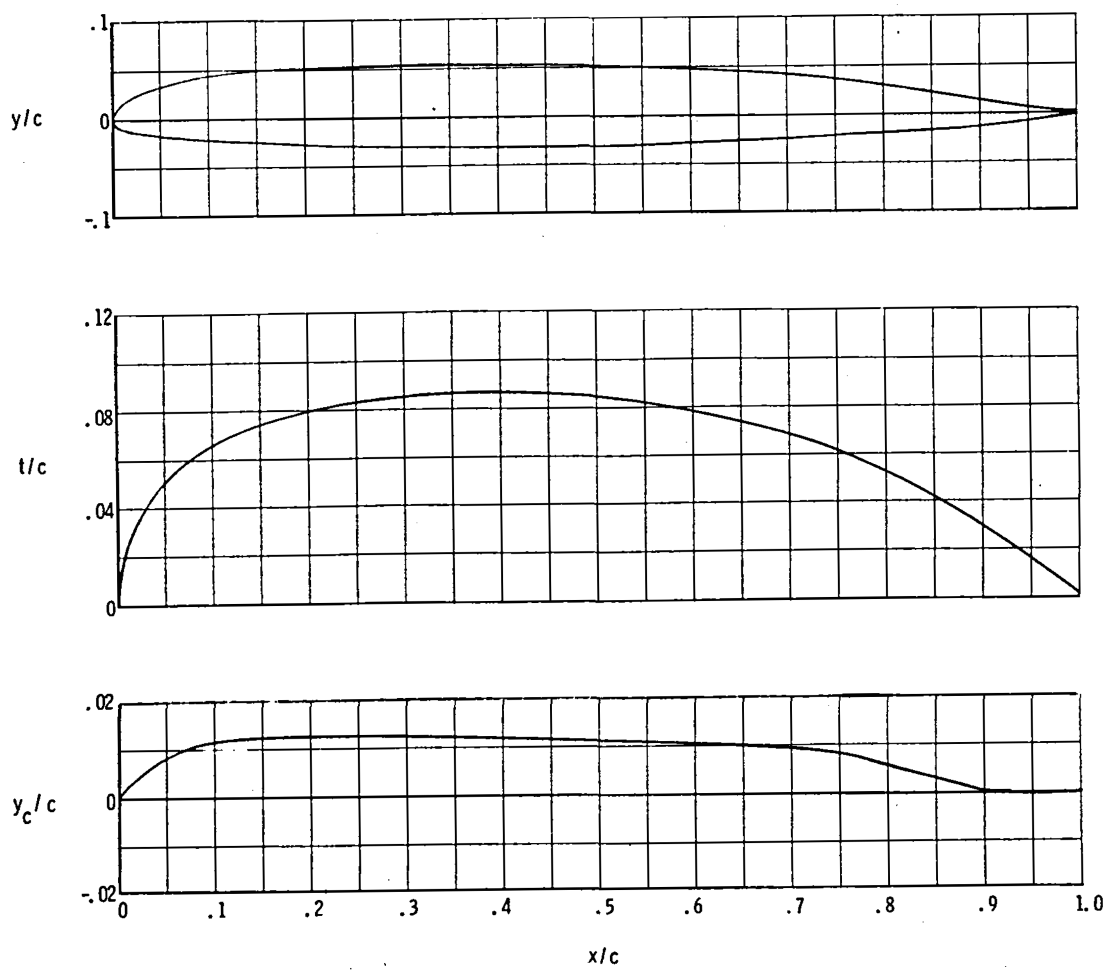



Figure 4.- Geometric characteristics of NLR-1T airfoil.

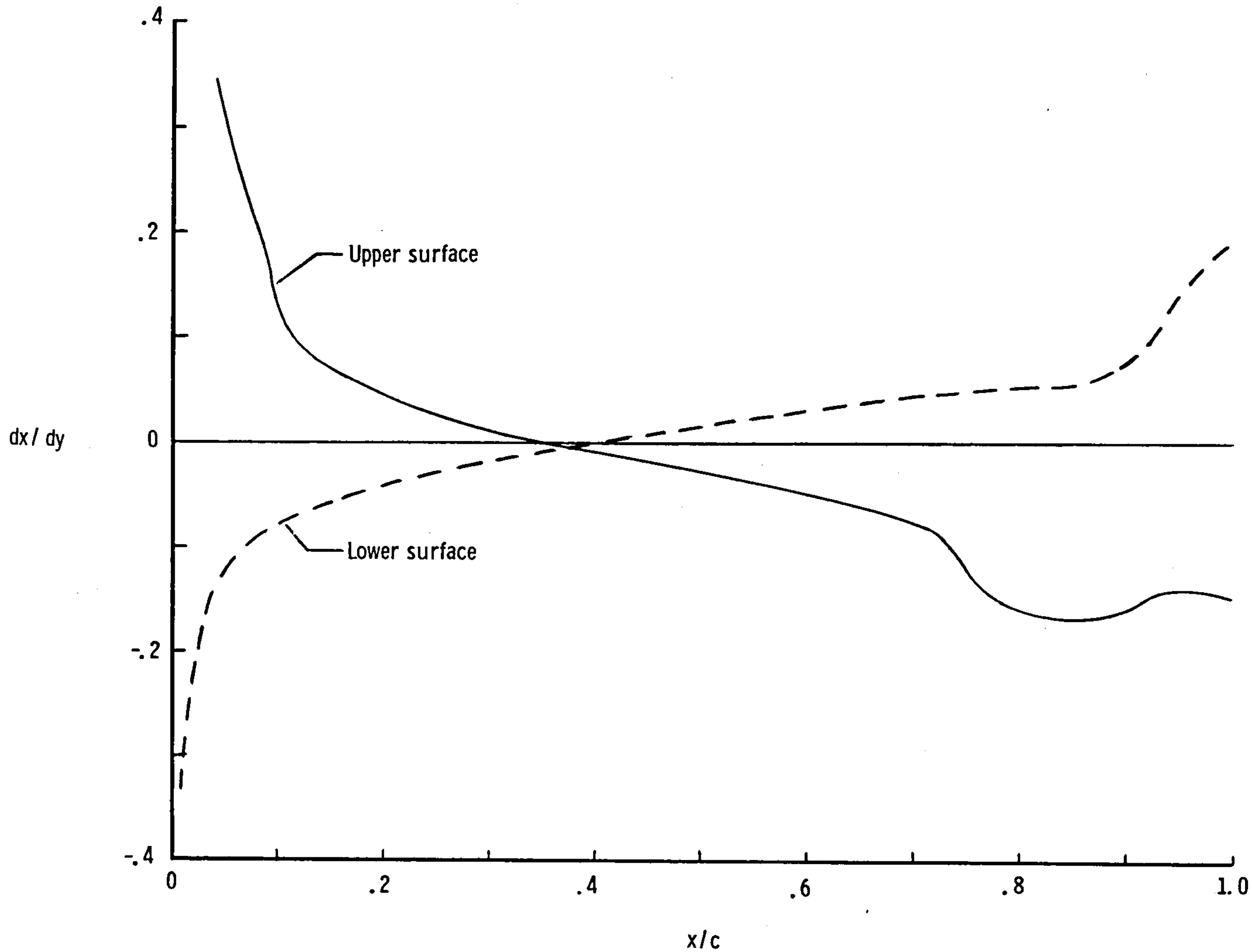



Figure 4.- Concluded.

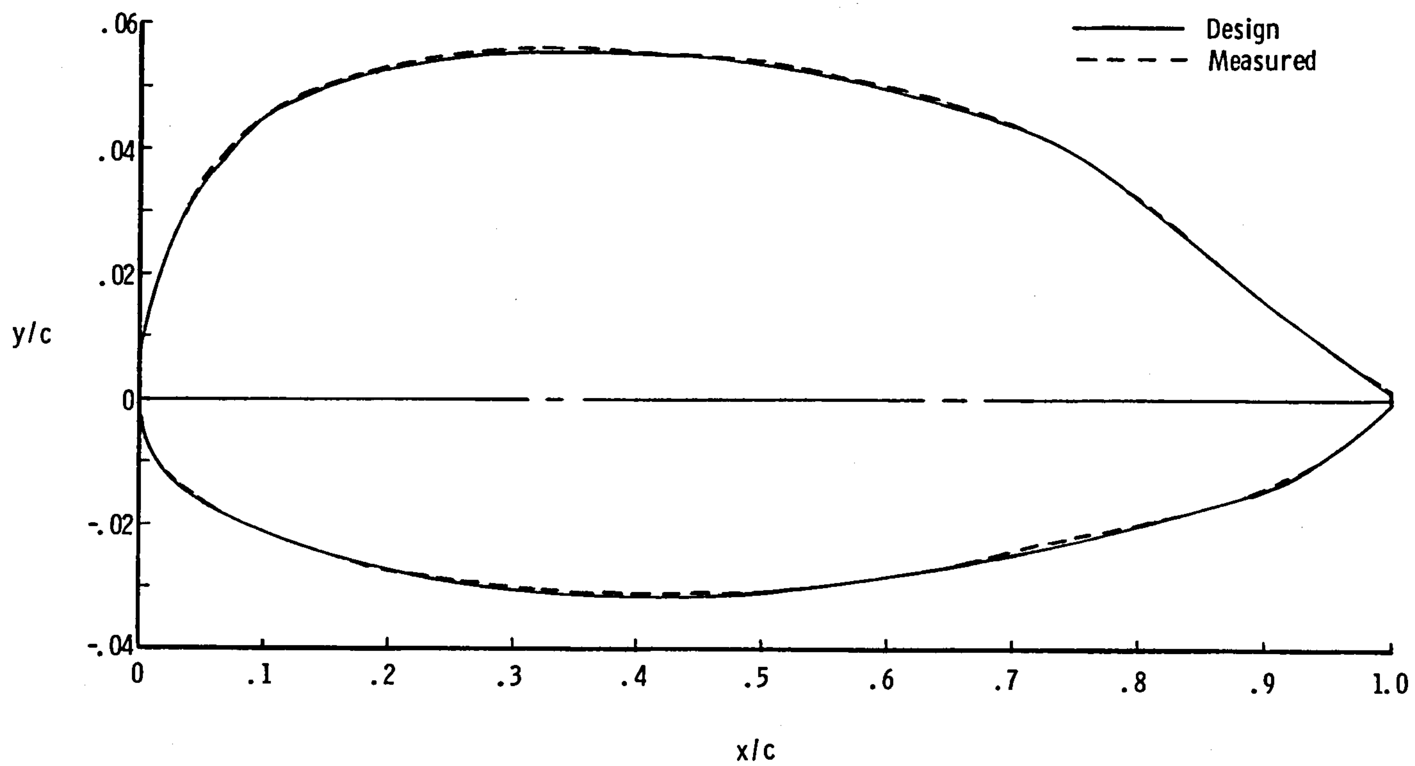



Figure 5.- Comparison of design and measured blade-section coordinates of 0.9R.

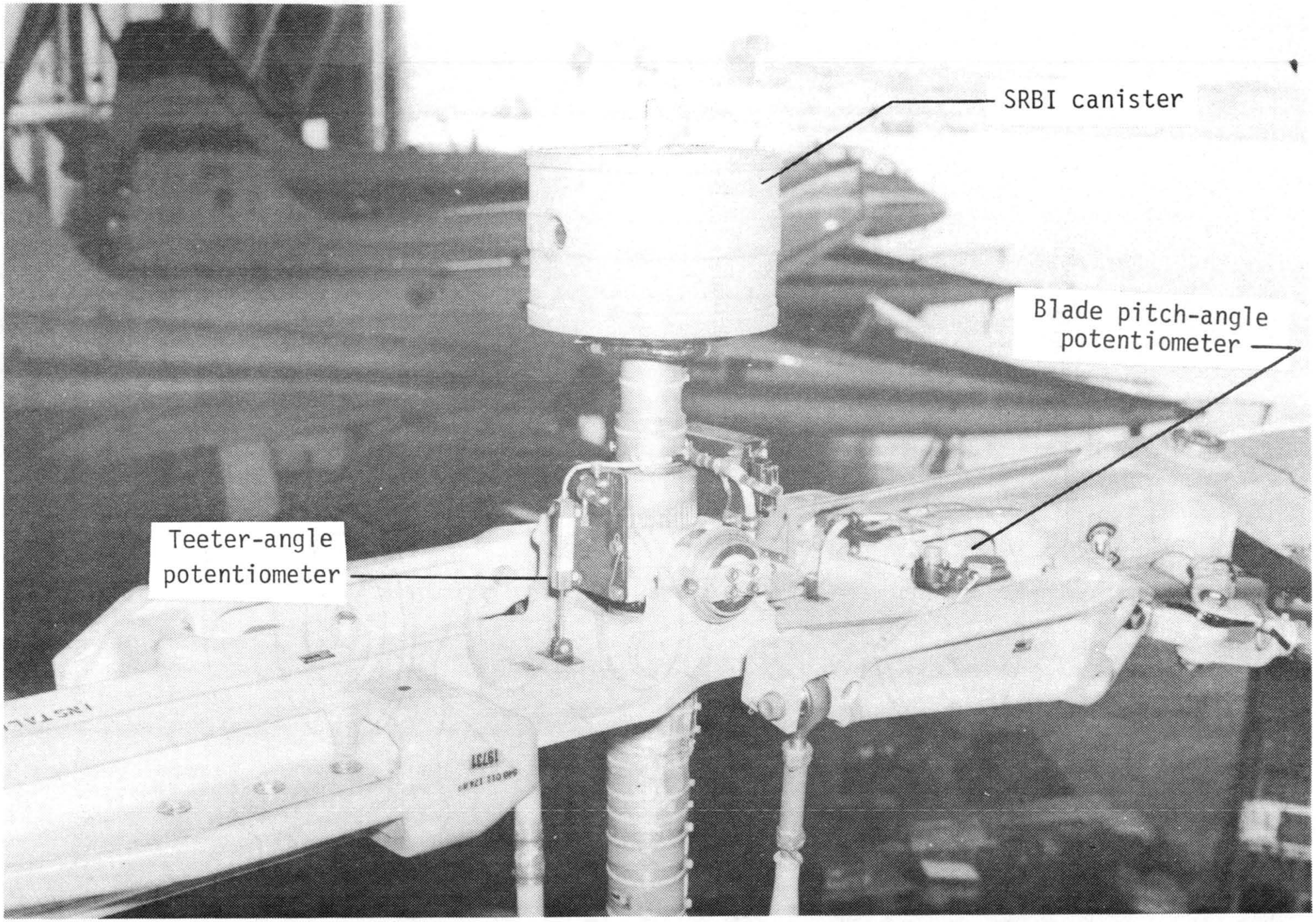



Figure 6.- Data canister and hub instrumentation.

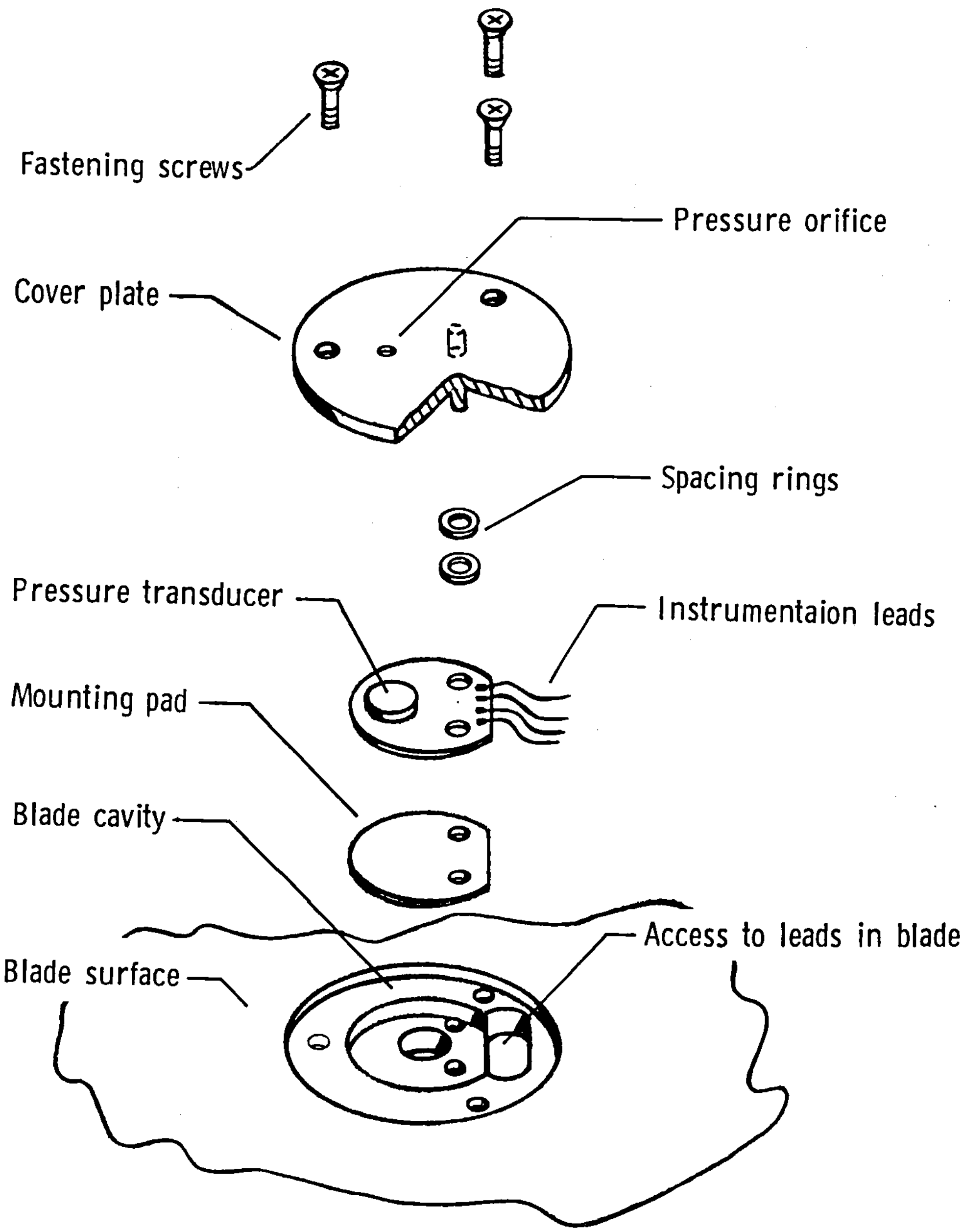



Figure 7.- Exploded-view drawing of typical pressure-transducer installation.

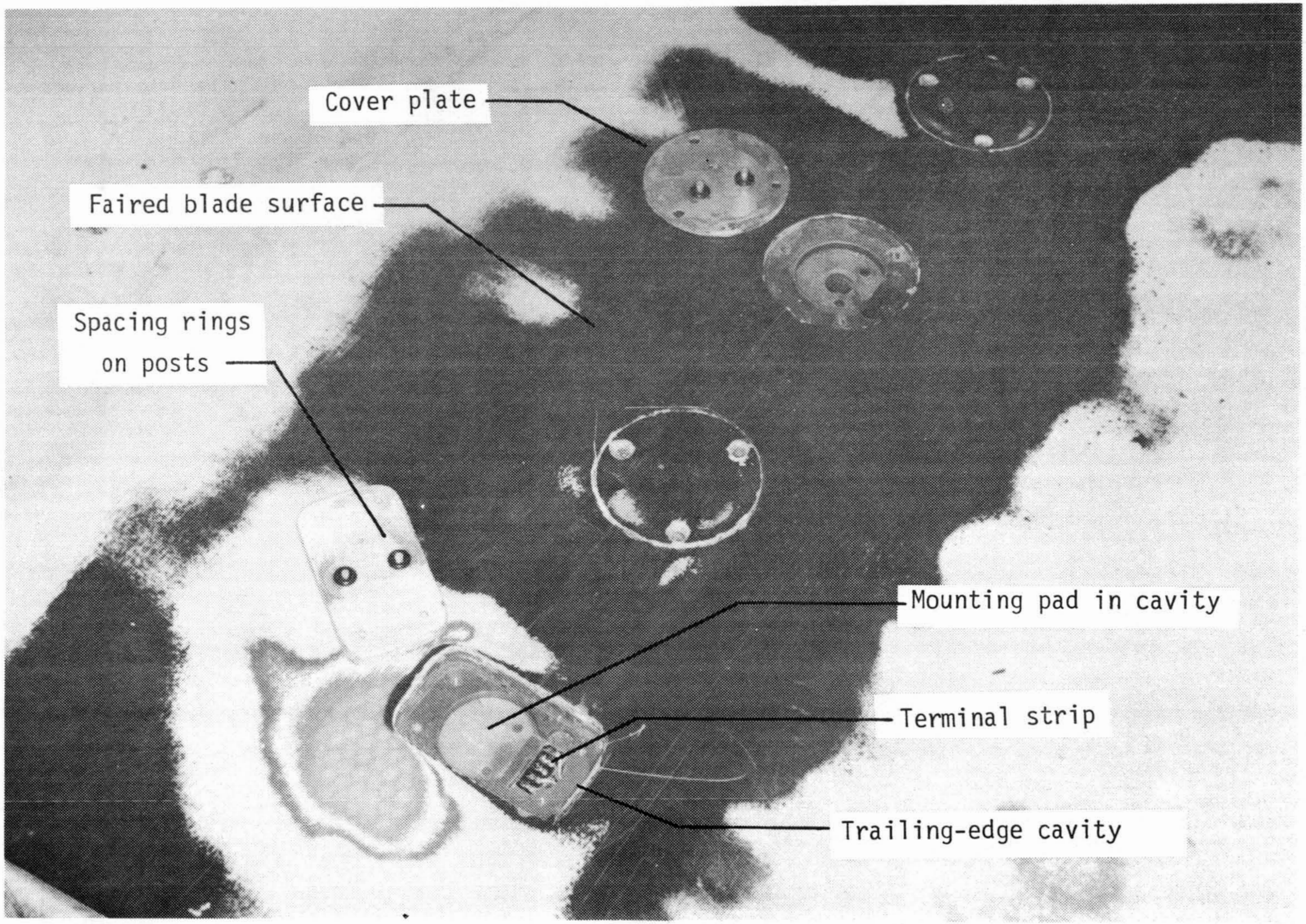
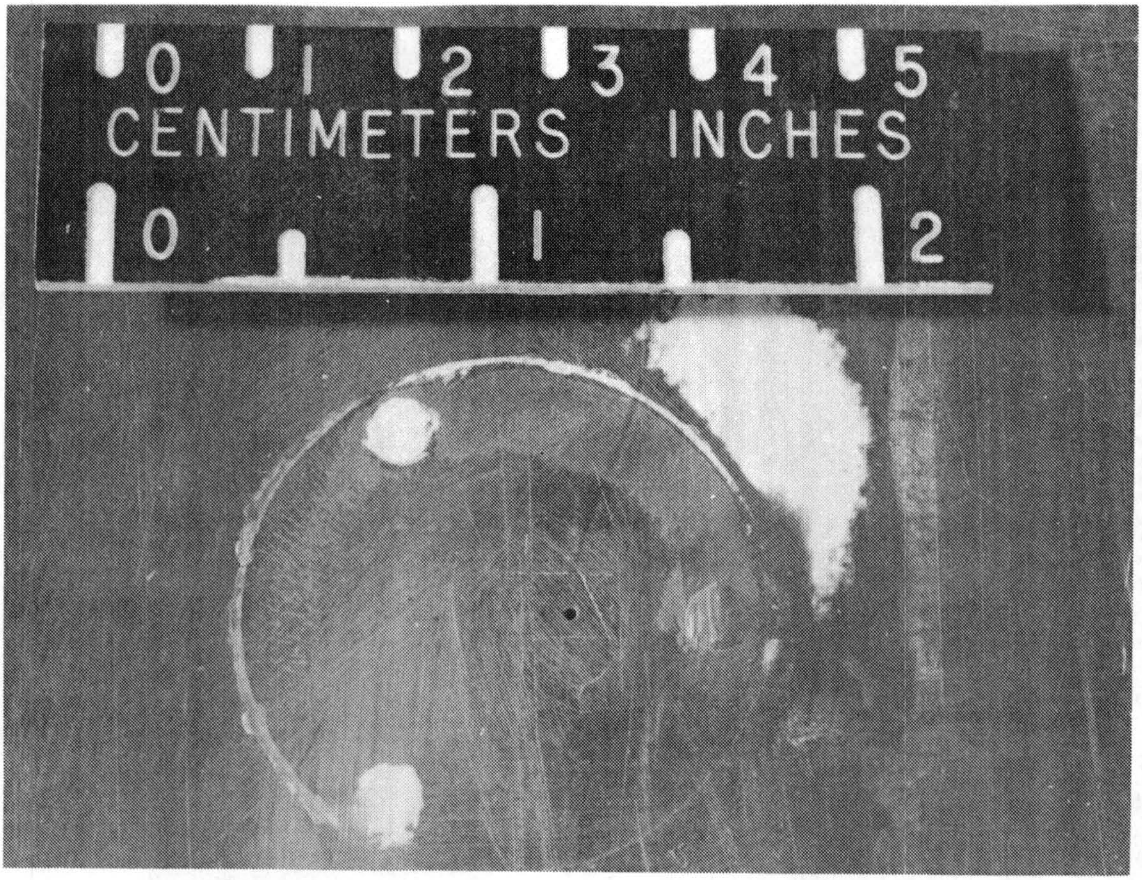
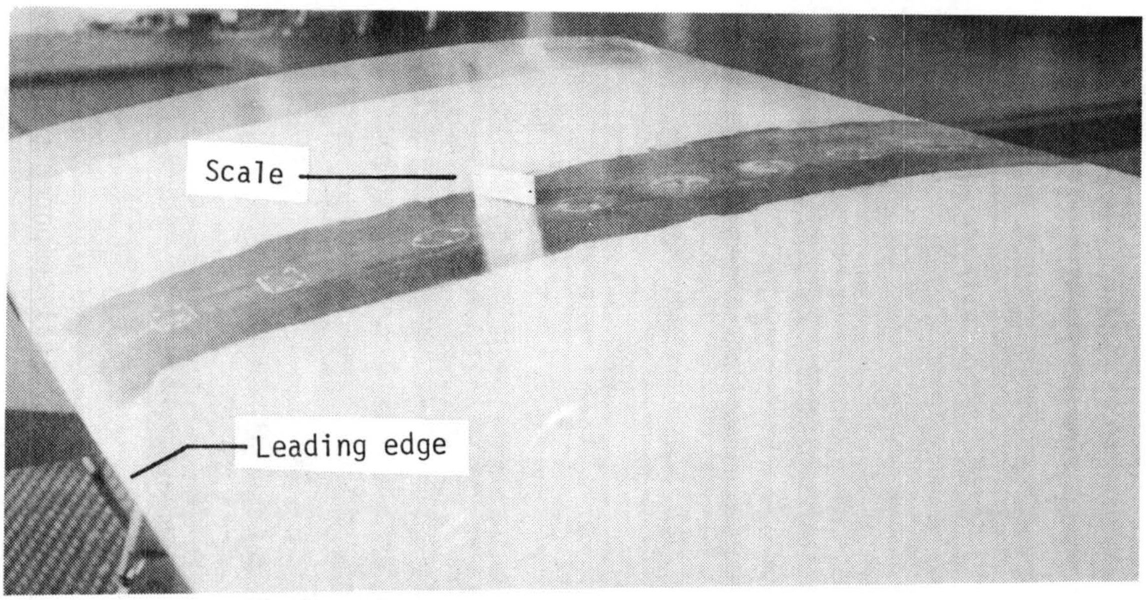



Figure 8.- Typical components for pressure-transducer assembly with transducers removed.




(a) Typical mid-chord cover plate.




(b) Blade upper surface.

Figure 9.- Blade surface with pressure transducers installed.

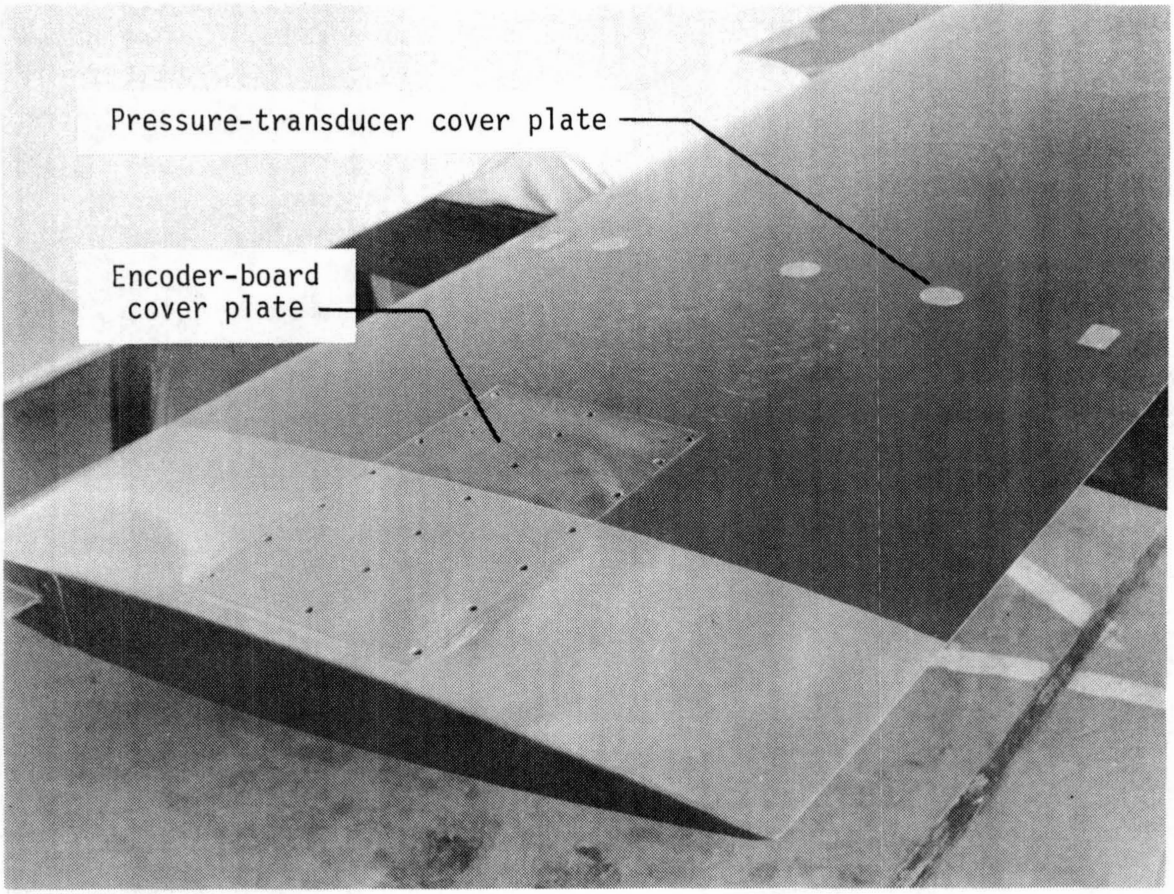
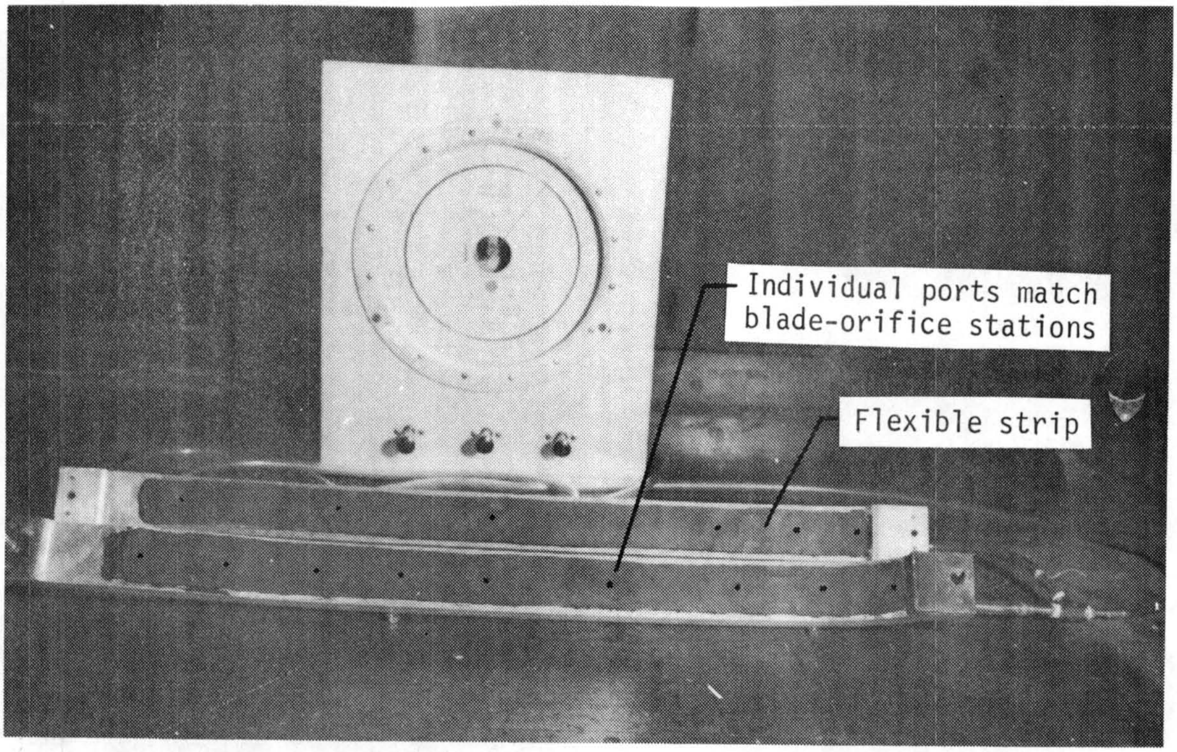
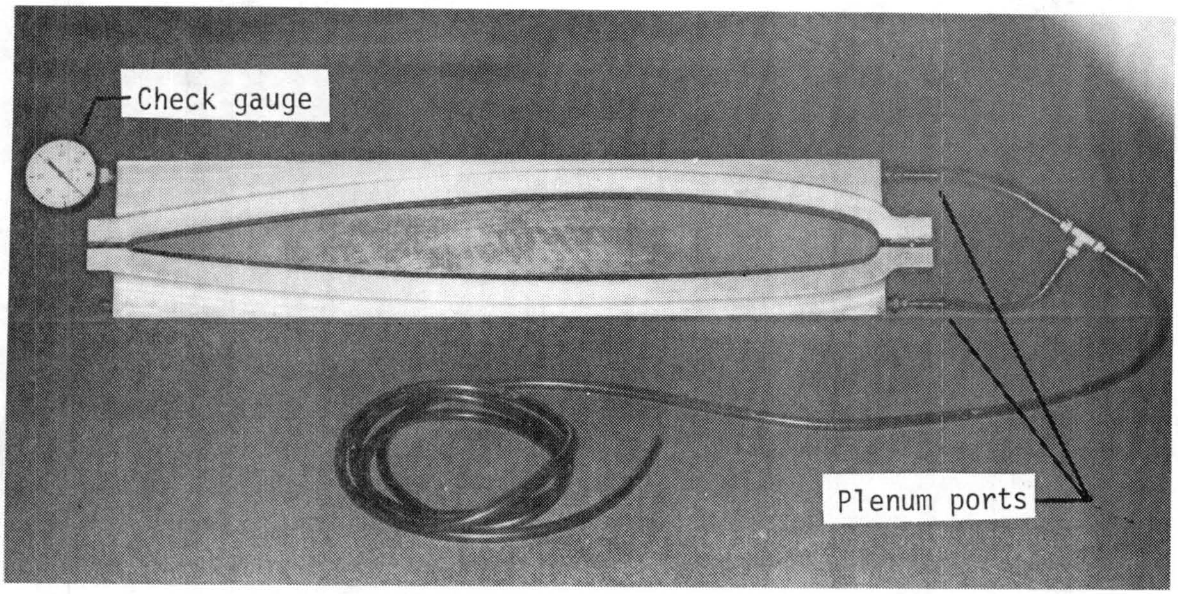



Figure 10.- Lower surface of blade tip prior to installation of pressure data system.

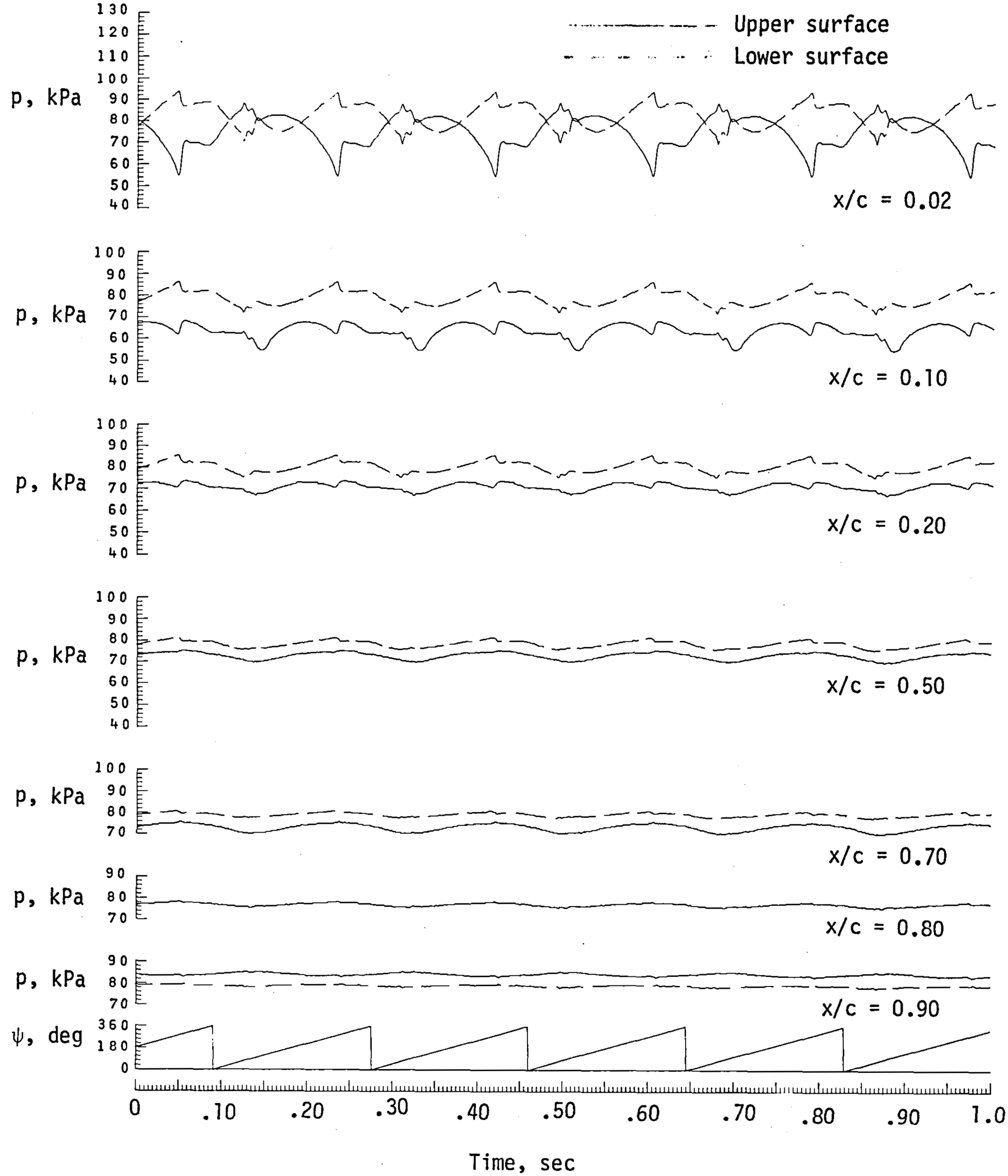



(a) Read-out gauge and fixture interior surfaces.



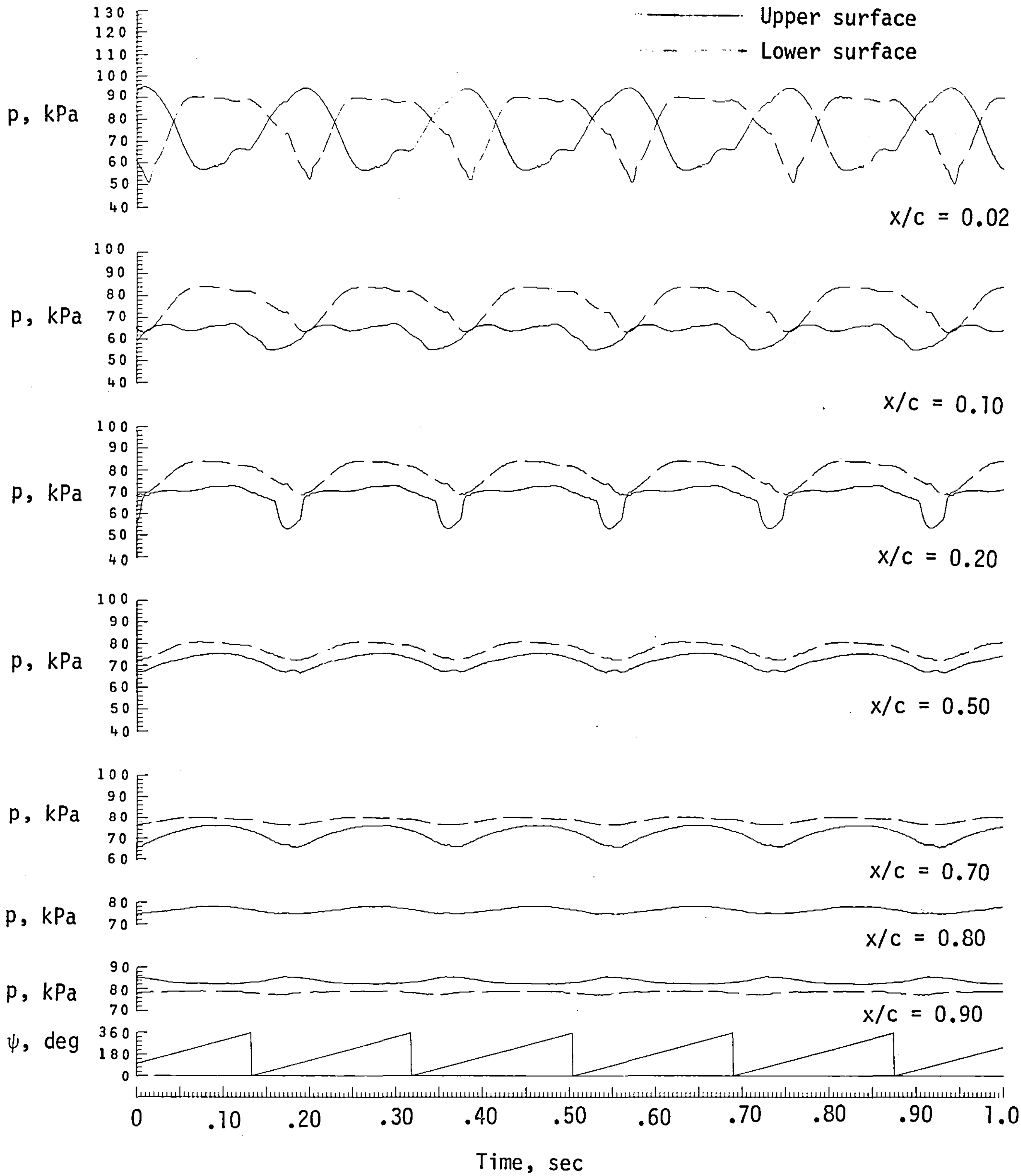

(b) Fixture installed on model blade section.

Figure 11.- Blade-section pressure fixture for preflight calibration.



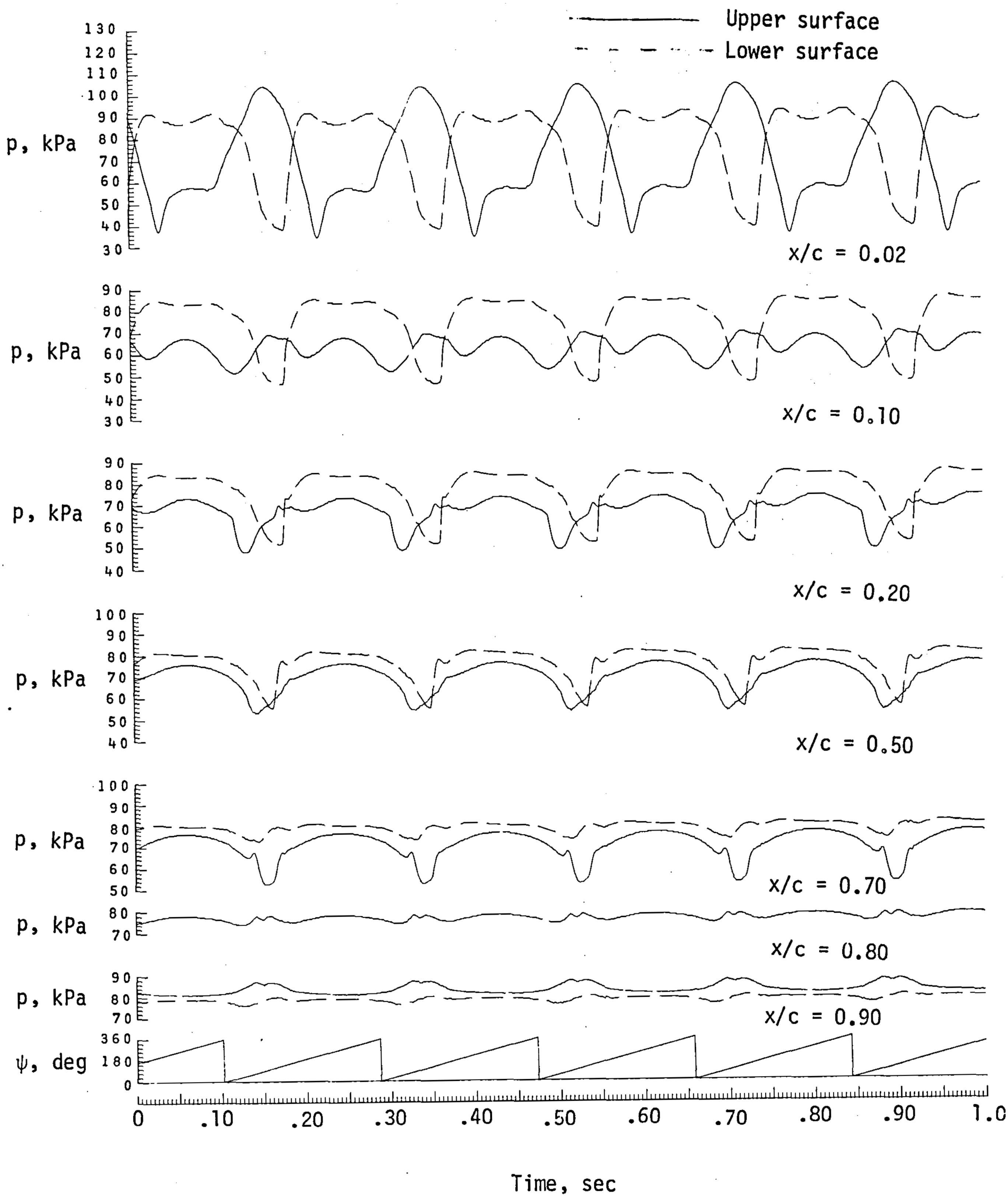

(a) $\mu$ = 0.151

Figure 12.- Histories of uncorrected, local blade pressures and rotor azimuth for level flight (Flight 63 of Appendices D and E). r/R = 0.9




(b) $\mu$ = 0.257

Figure 12.- Continued.




(c) $\mu = 0.370$

Figure 12.- Concluded.

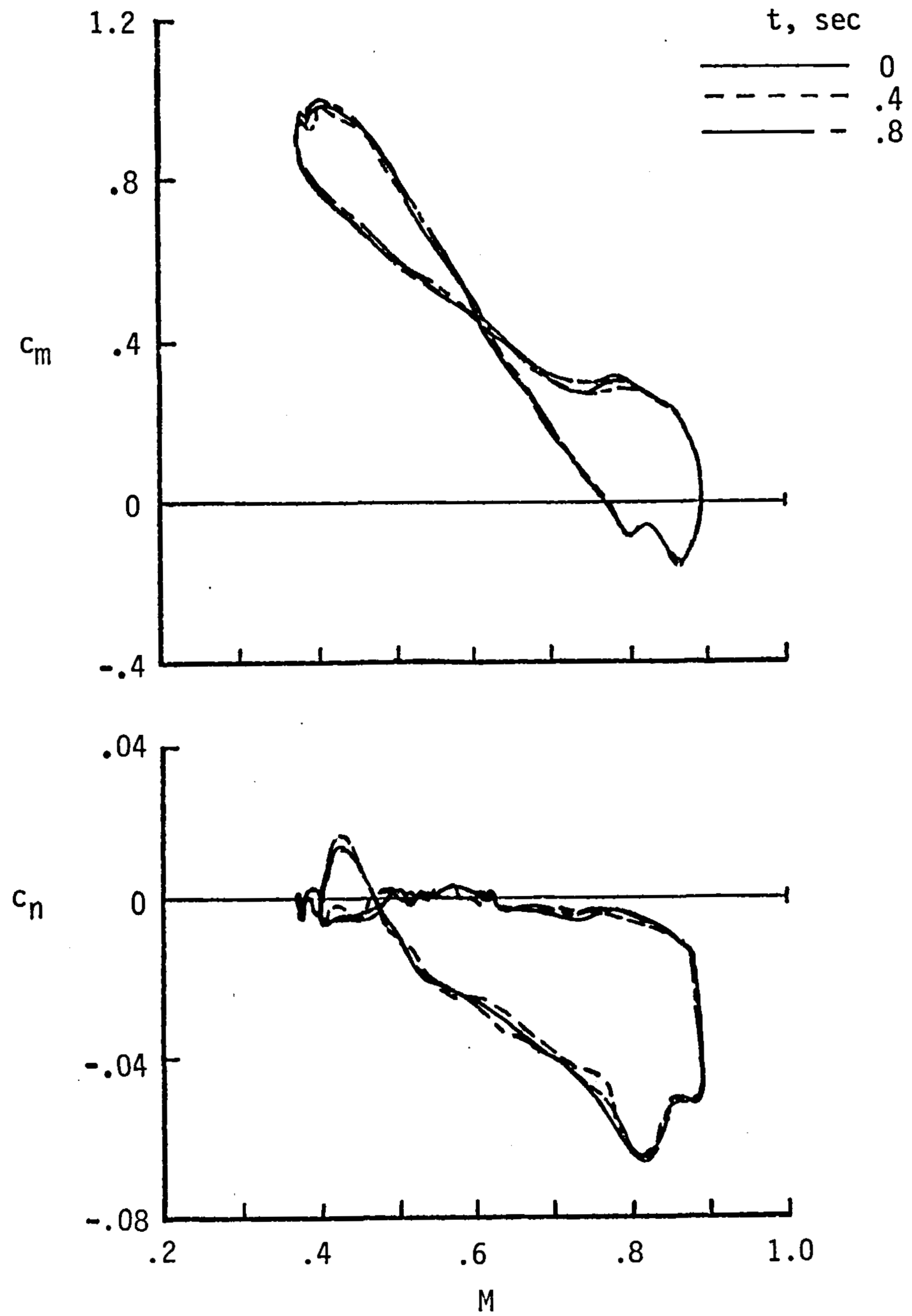



Figure 13.- Comparison of blade section data for several rotor revolutions at one test point. $C_L' = 0.0043$; $\mu = 0.37$; $r/R = 0.9$.

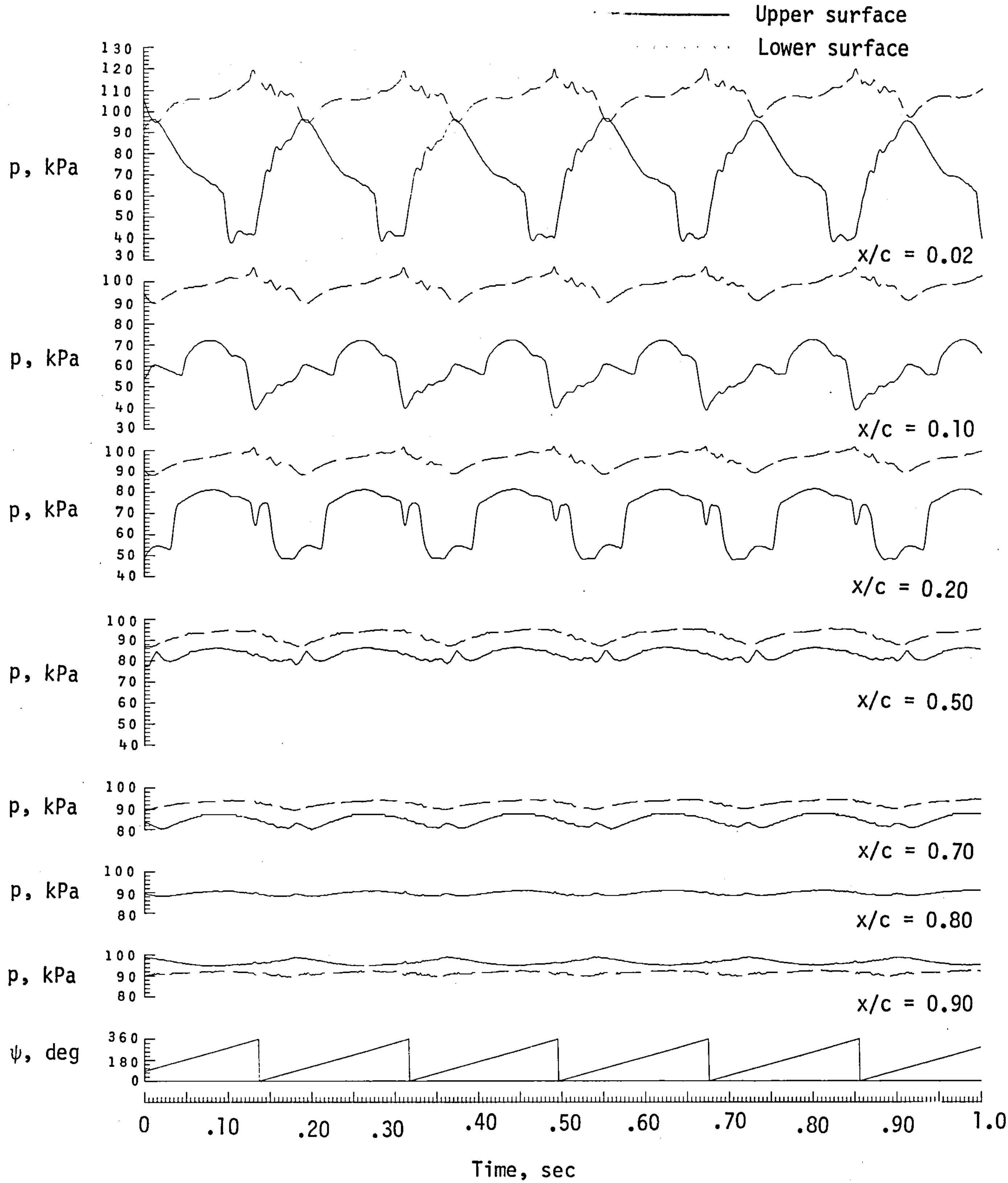



Figure 14.- Histories of uncorrected, local blade pressures and rotor azimuth for a descending left turn. $\mu = 0.224$; $C_L' = 0.0086$; $r/R = 0.9$.

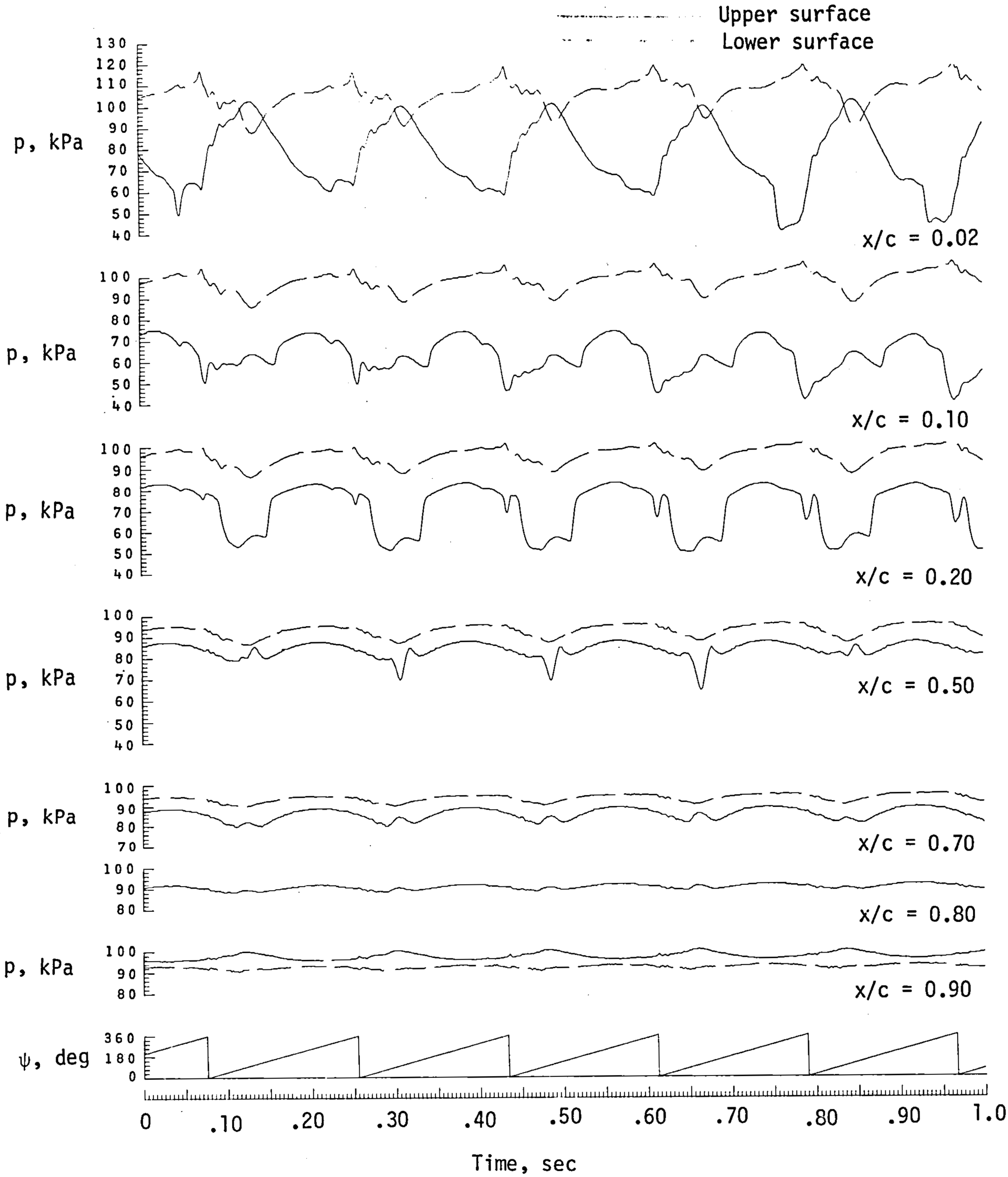



Figure 15.- Histories of uncorrected, local blade pressures and rotor azimuth for a symmetrical pull-up (Flight 66, run 22 of Appendices D and E). $\mu = 0.24$; $C_L' = 0.0075$; $r/R = 0.9$.

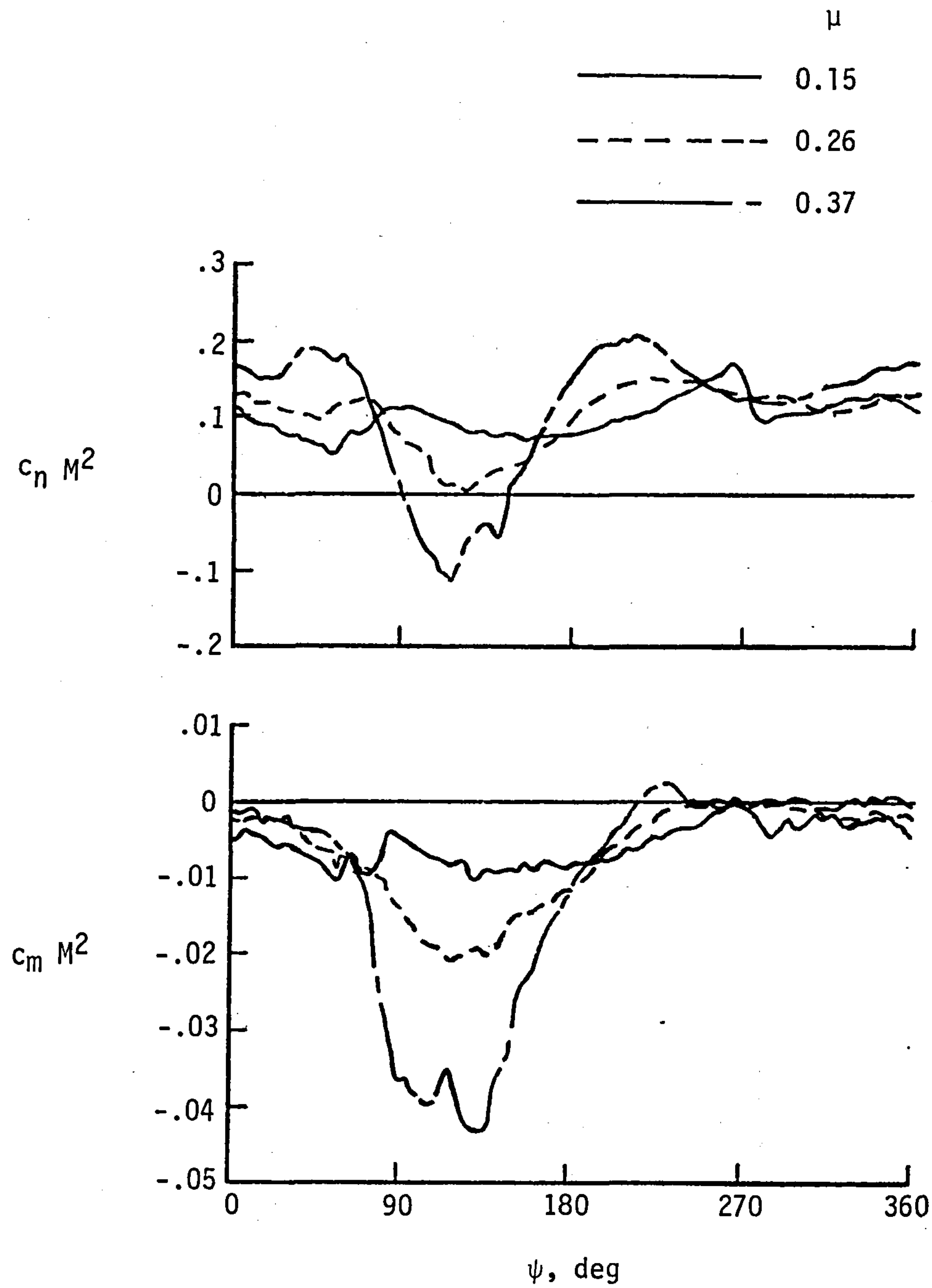
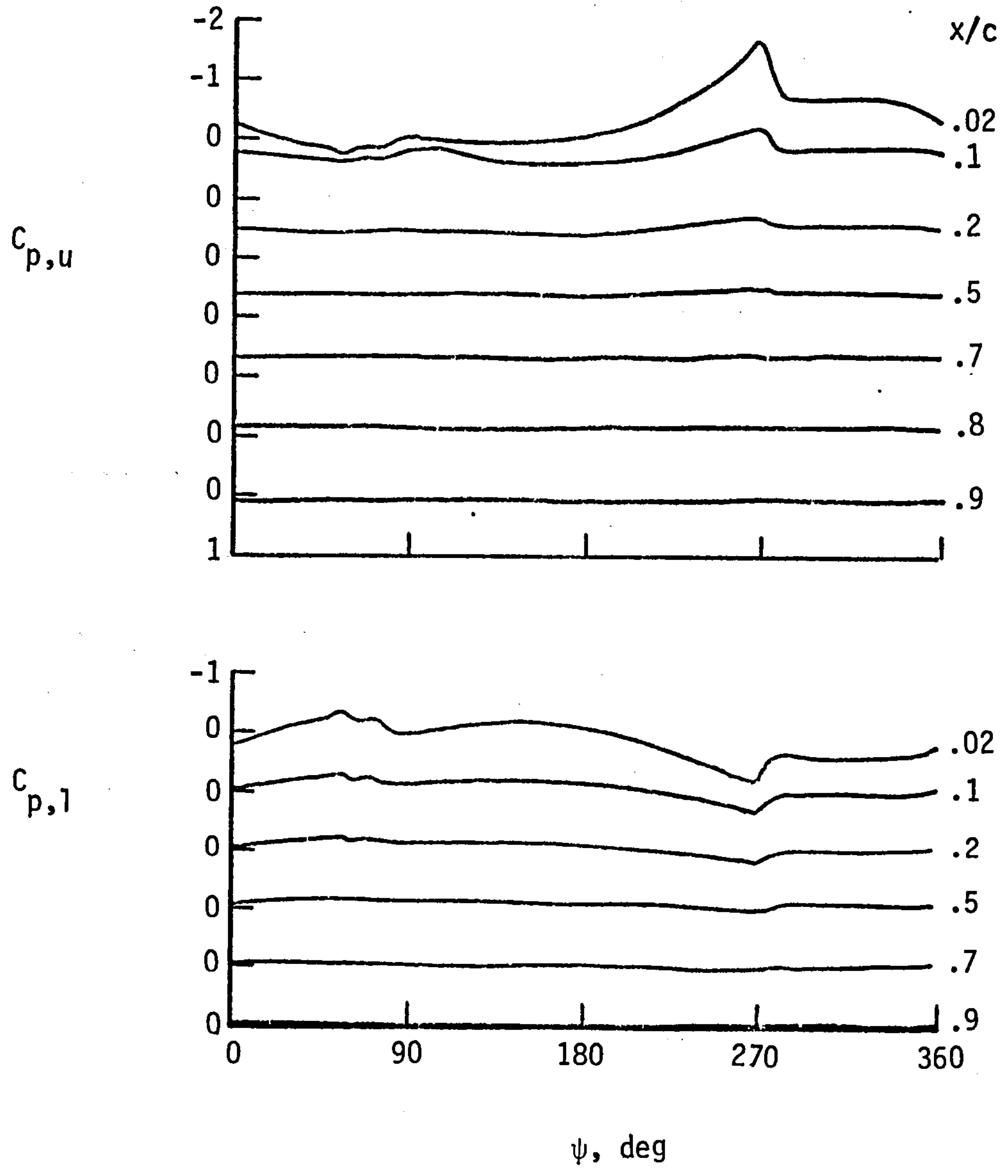
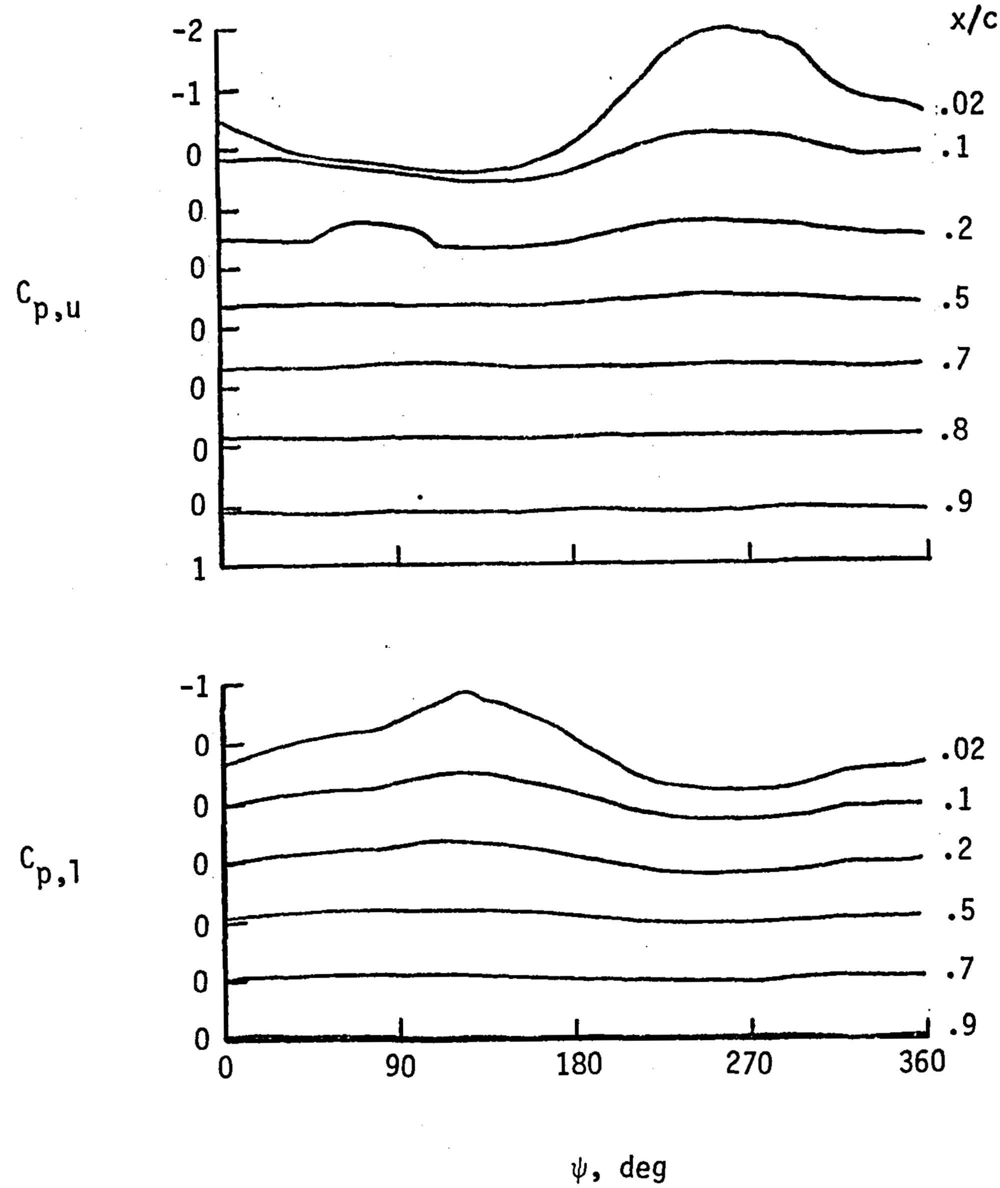



Figure 16.- Azimuthwise distribution of blade-section aerodynamic loads for three tip-speed ratios.



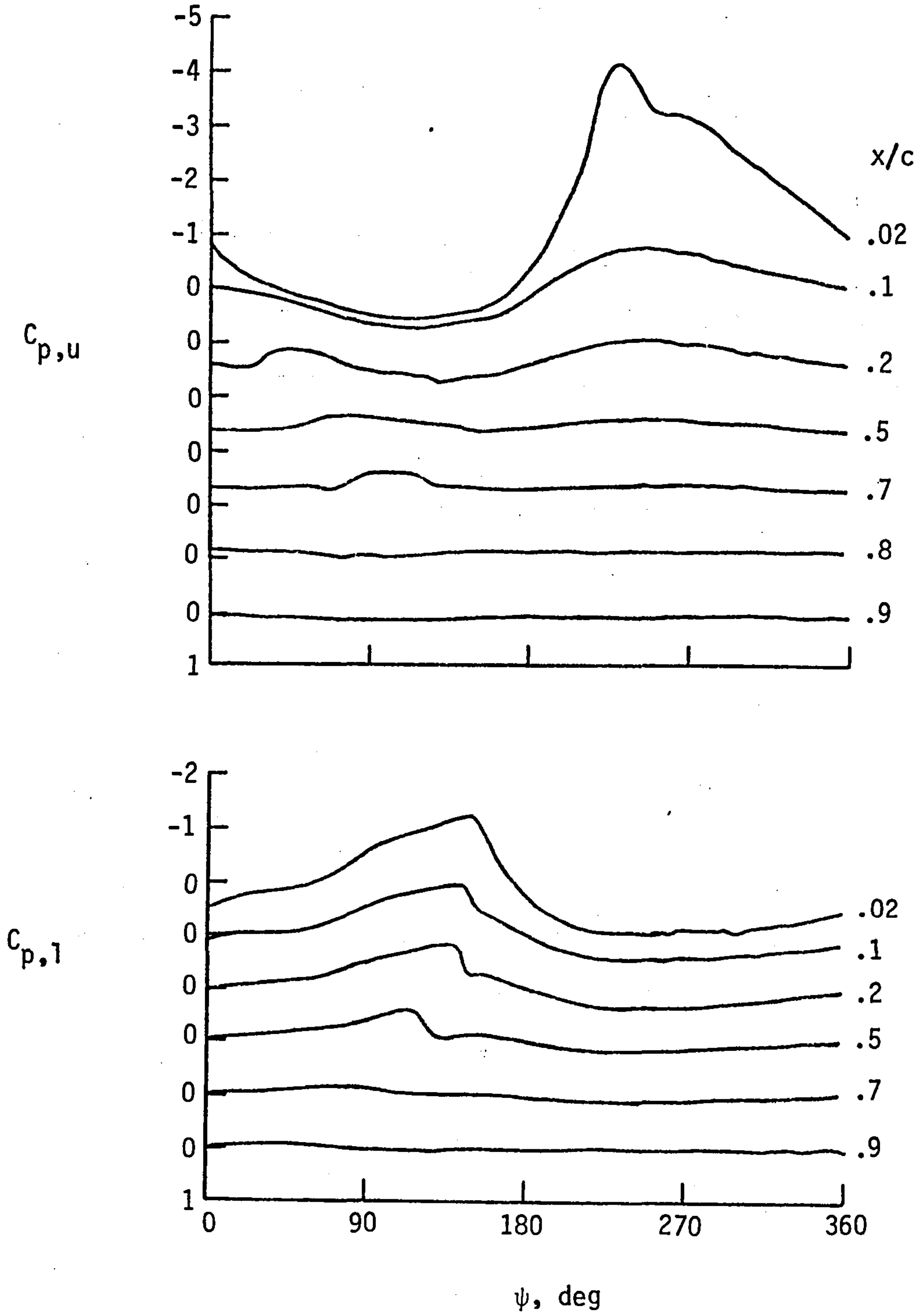

(a) $\mu = 0.15$

Figure 17.- Pressure coefficient records for several values of tip-speed ratio in level flight. $M_h = 0.70$; $C_L' = 0.0043$; $r/R = 0.9$.



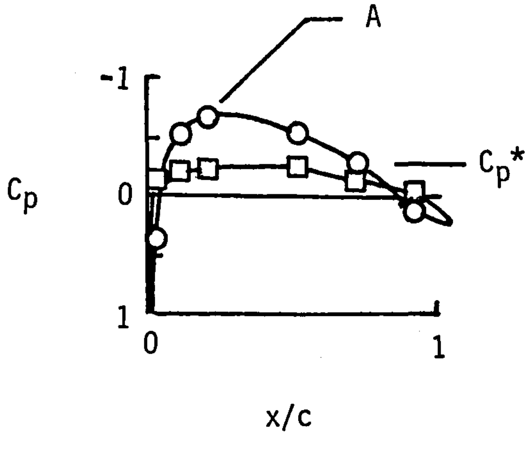

(b) $\mu = 0.26$

Figure 17.- Continued.

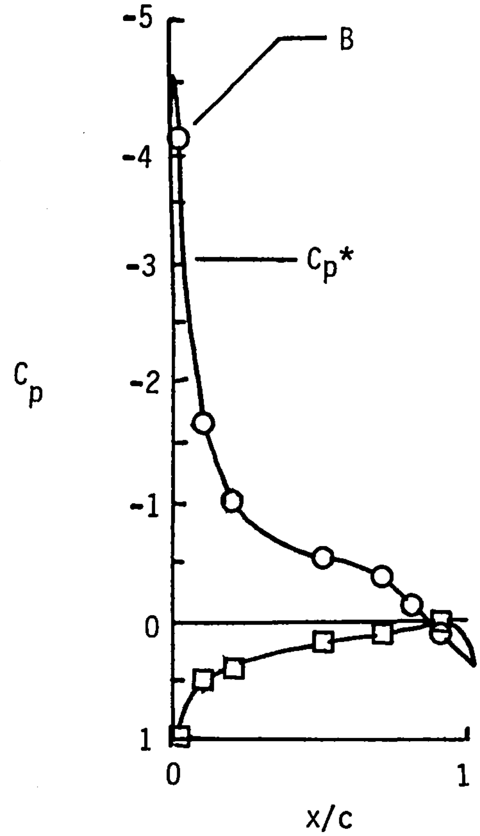



(c) $\mu = 0.37$

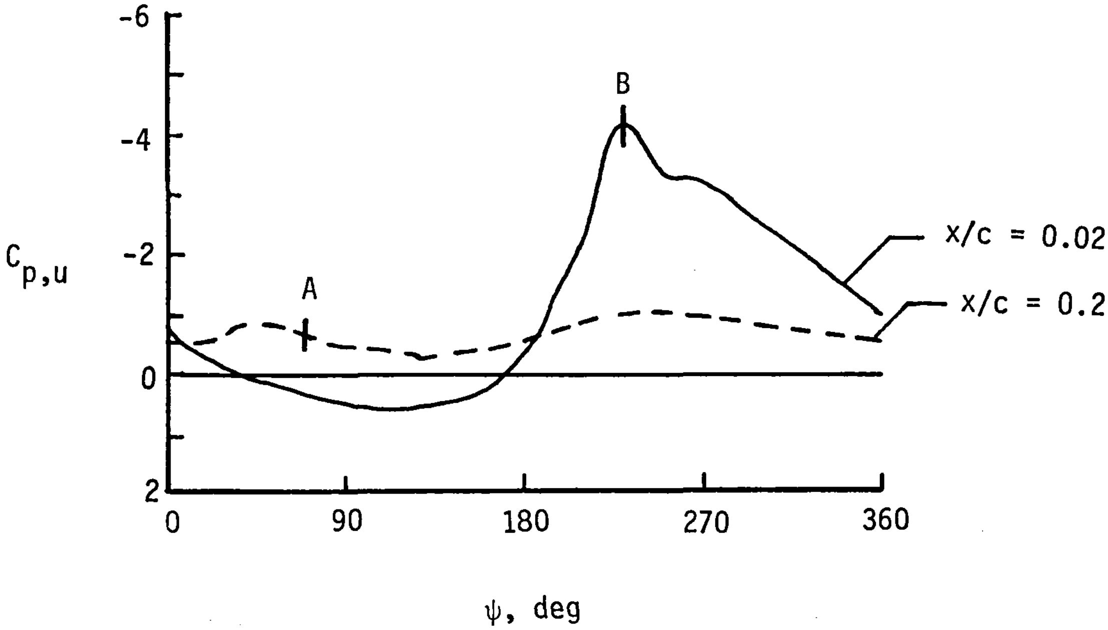
Figure 17.- Concluded.




(a) Pressure distribution, $\psi = 70^o$




(b) Pressure distribution, $\psi = 230^o$




(c) Pressure as a function of azimuth

Figure 18.- Pressure-data characteristics for local supercritical flow. $\mu = 0.37$; $C_L{}' = 0.0043$; $r/R = 0.9$.

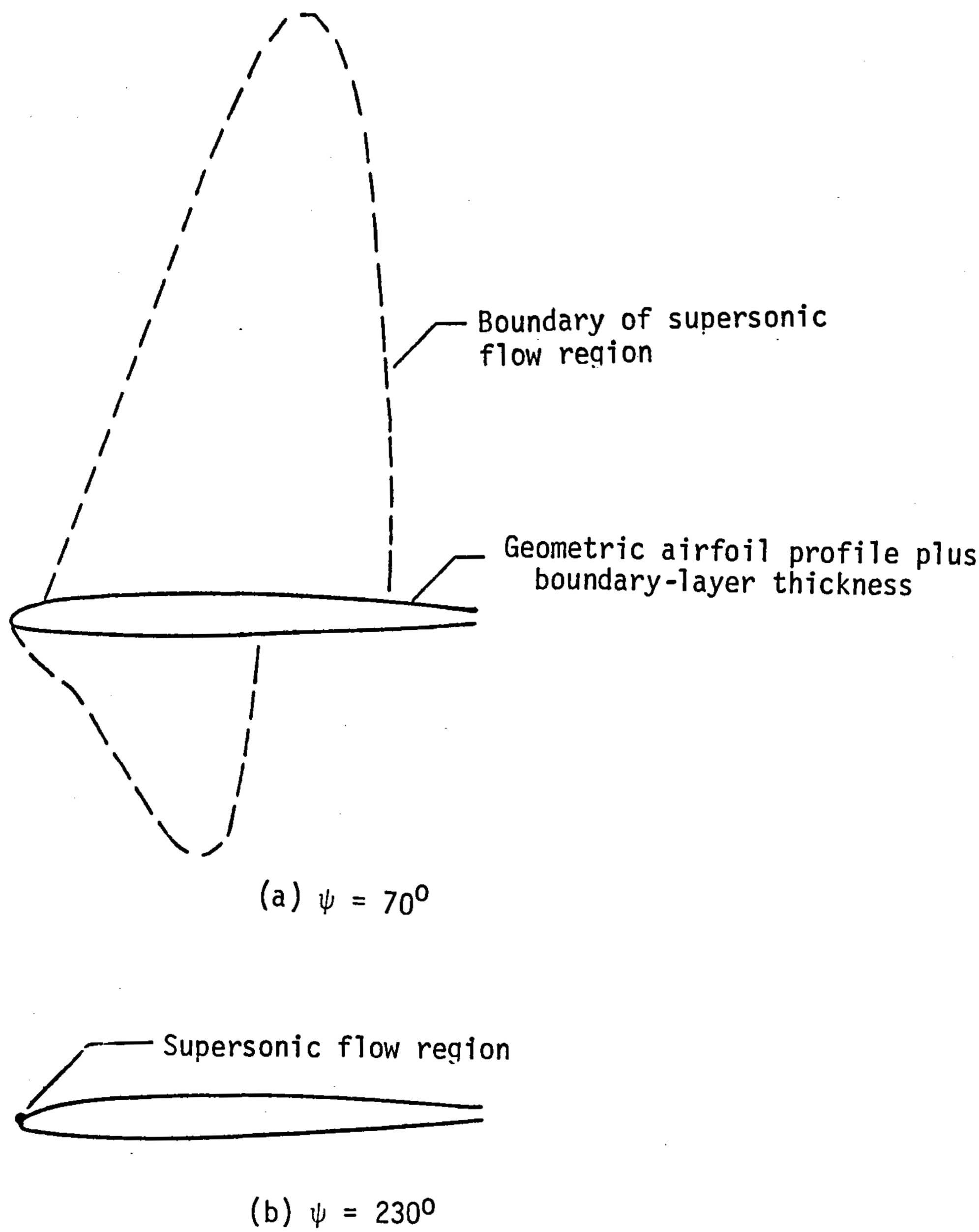
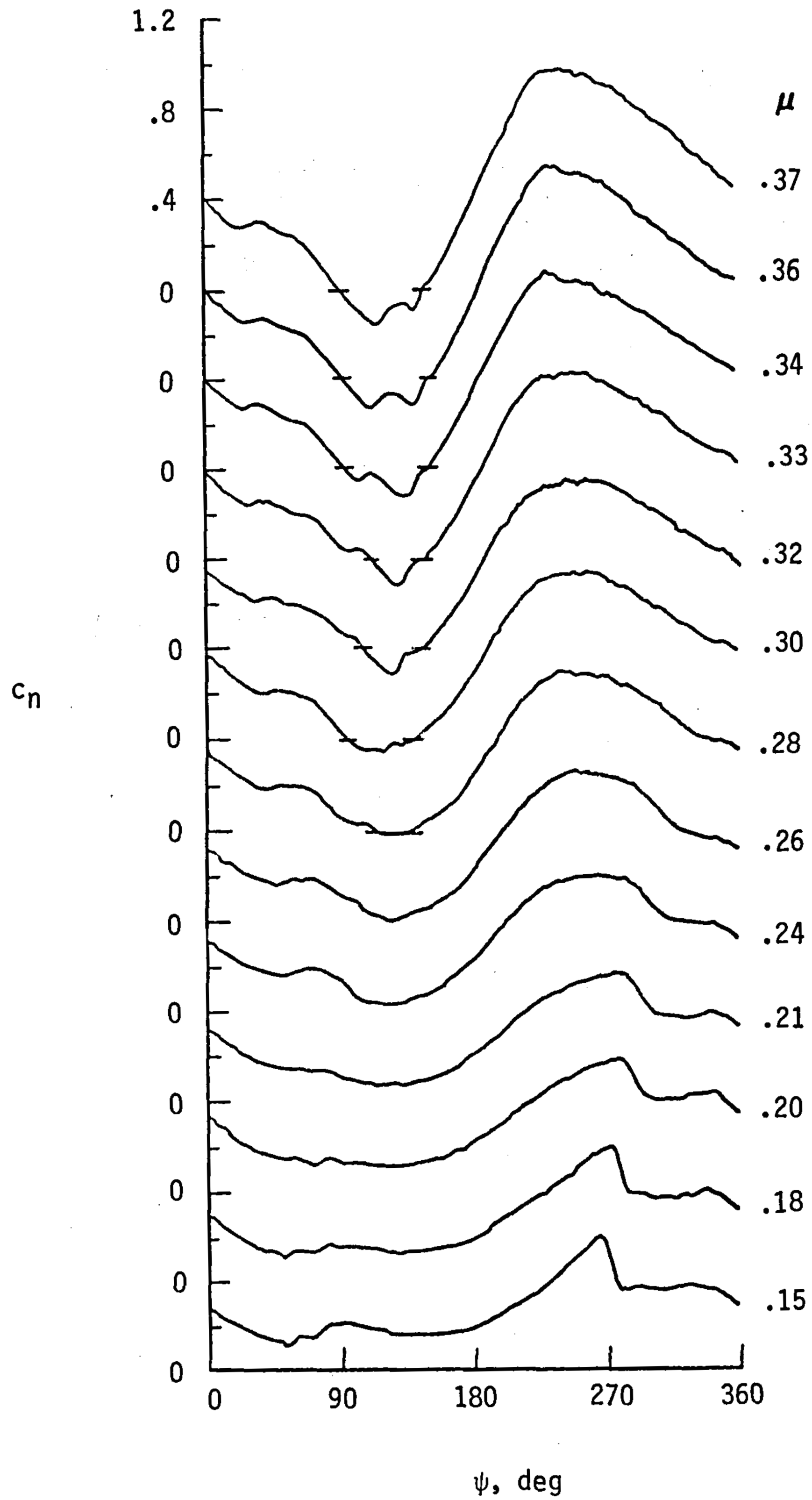
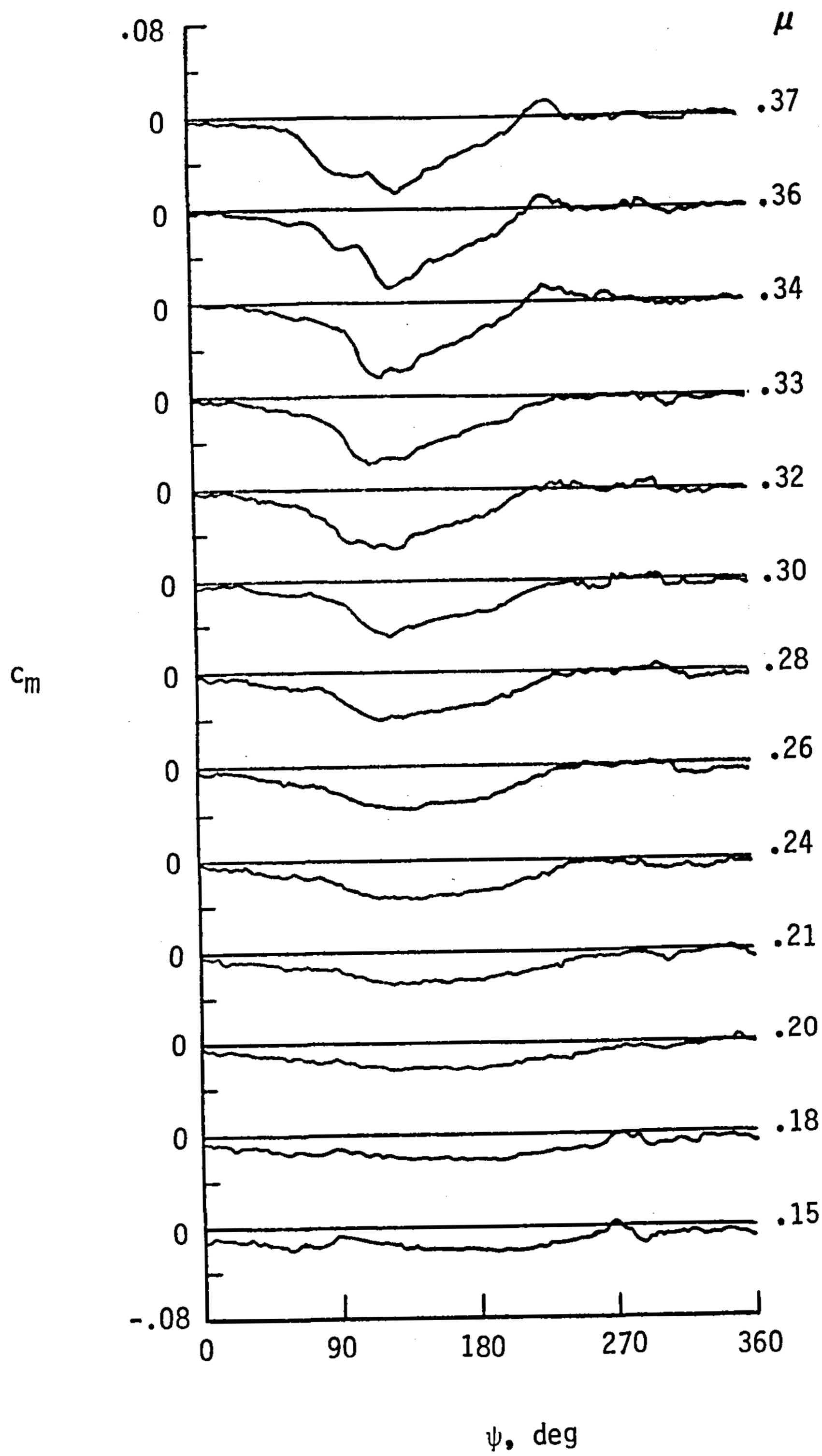



Figure 19.- Sample patterns of supersonic flow regions for blade section. $\mu = 0.37$; $C_L{}' = 0.0043$; $r/R = 0.9$.



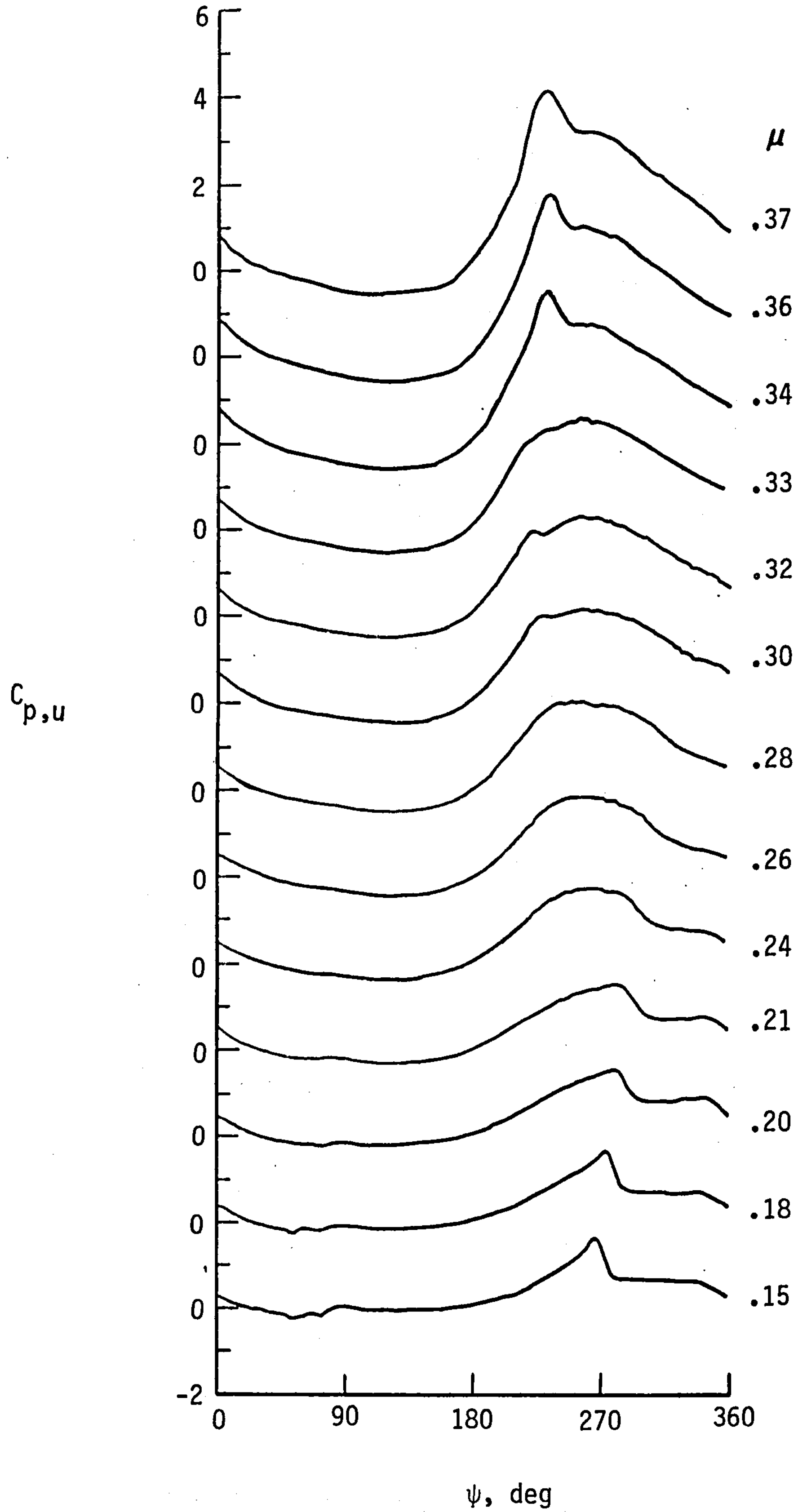

(a) Normal-force coefficient.

Figure 20.- Azimuthal distribution of blade-section aerodynamic characteristics at a series of tip-speed ratios (Flight 63 of Appendices D and E). $\overline{C}_L{}' = 0.0043$; $\overline{M}_h = 0.70$; $r/R = 0.9$.



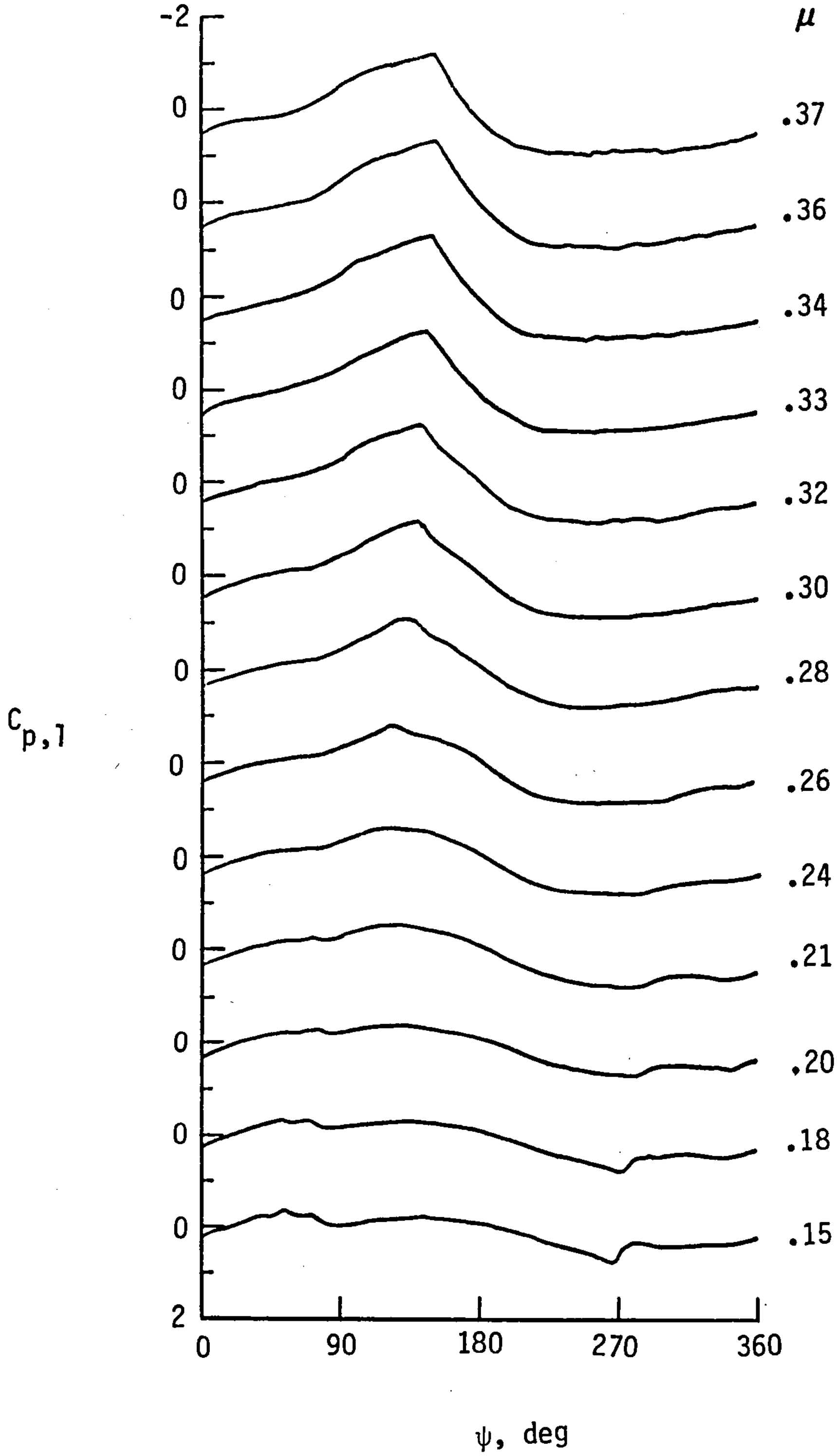

(b) Pitching-moment coefficient

Figure 20.- Continued.




(c) Upper-surface pressure coefficient; x/c = 0.02.

Figure 20.- Continued.




(d) Lower-surface pressure coefficient; x/c = 0.02.

Figure 20.- Concluded.

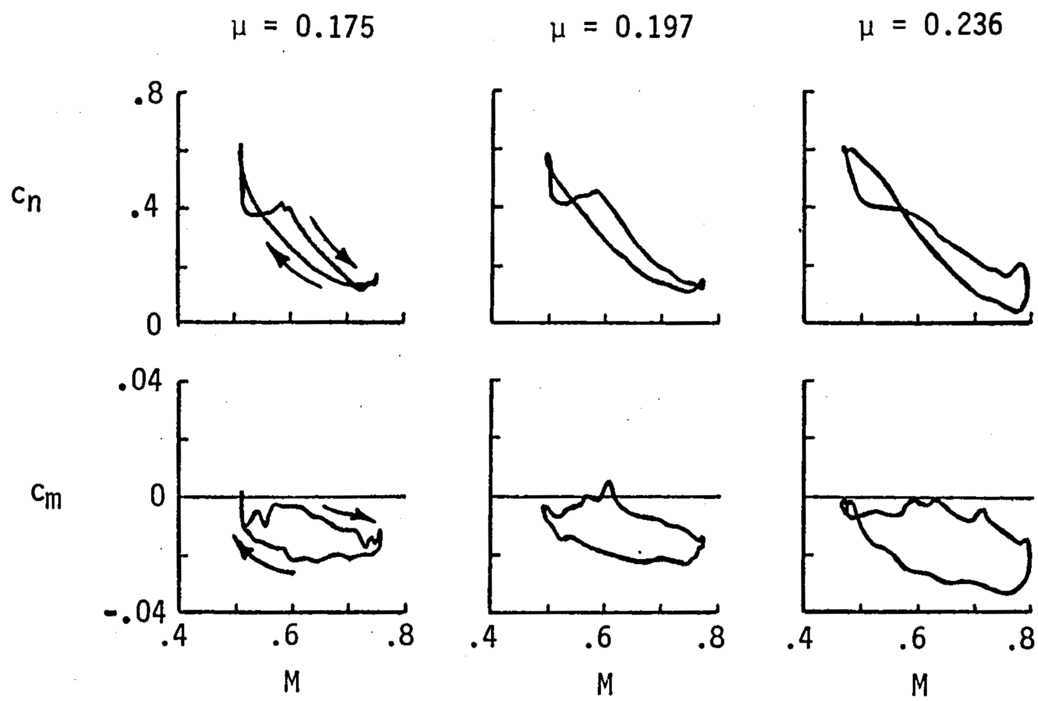



Figure 21.- Blade-section operating conditions at a series of tip-speed ratios. $\overline{C}_L{}' = 0.0043$; $\overline{M}_h = 0.70$; $r/R = 0.9$.

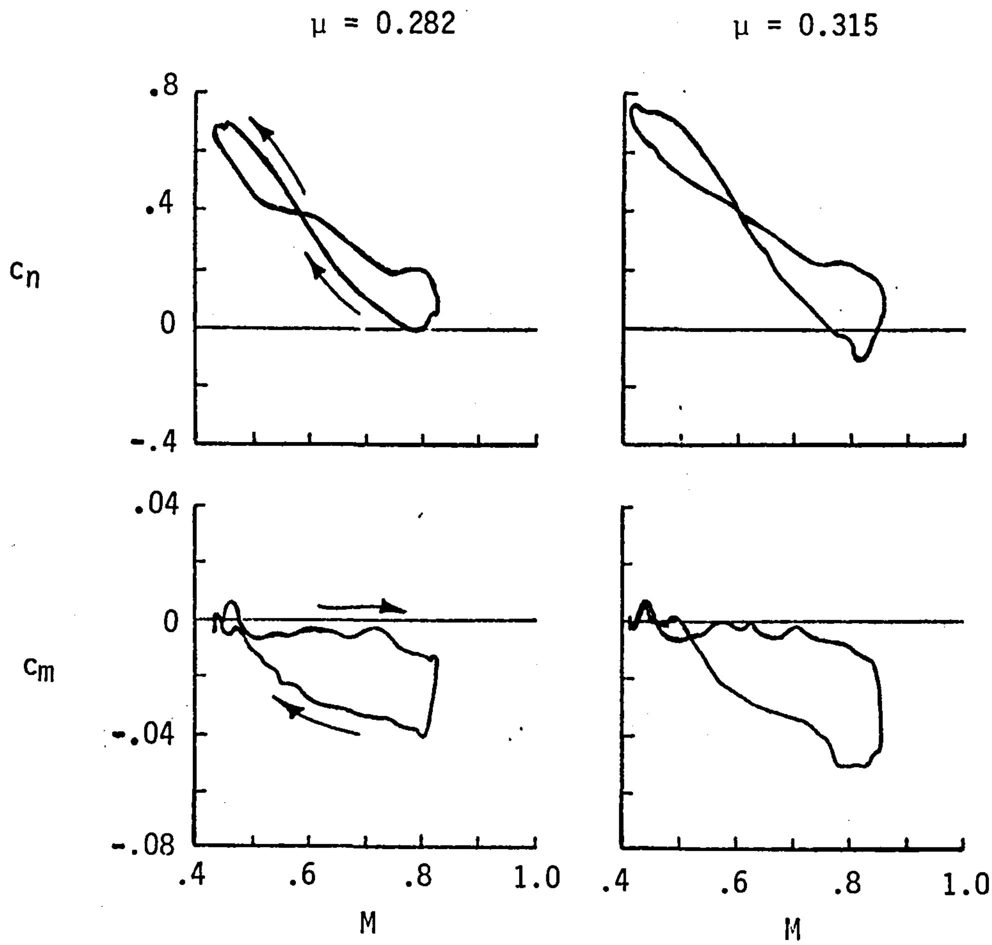



Figure 21.- Continued.

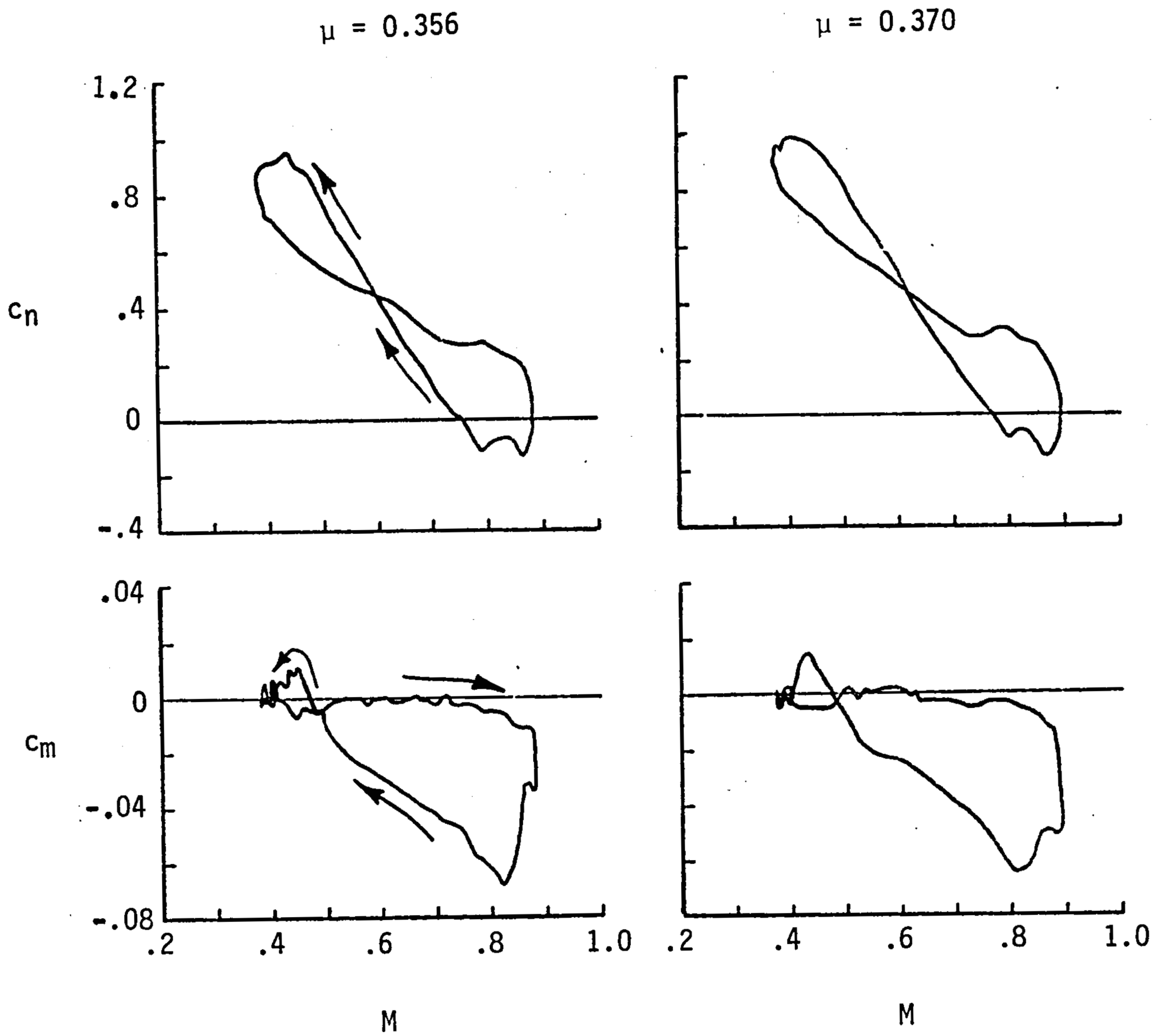



Figure 21.- Concluded.

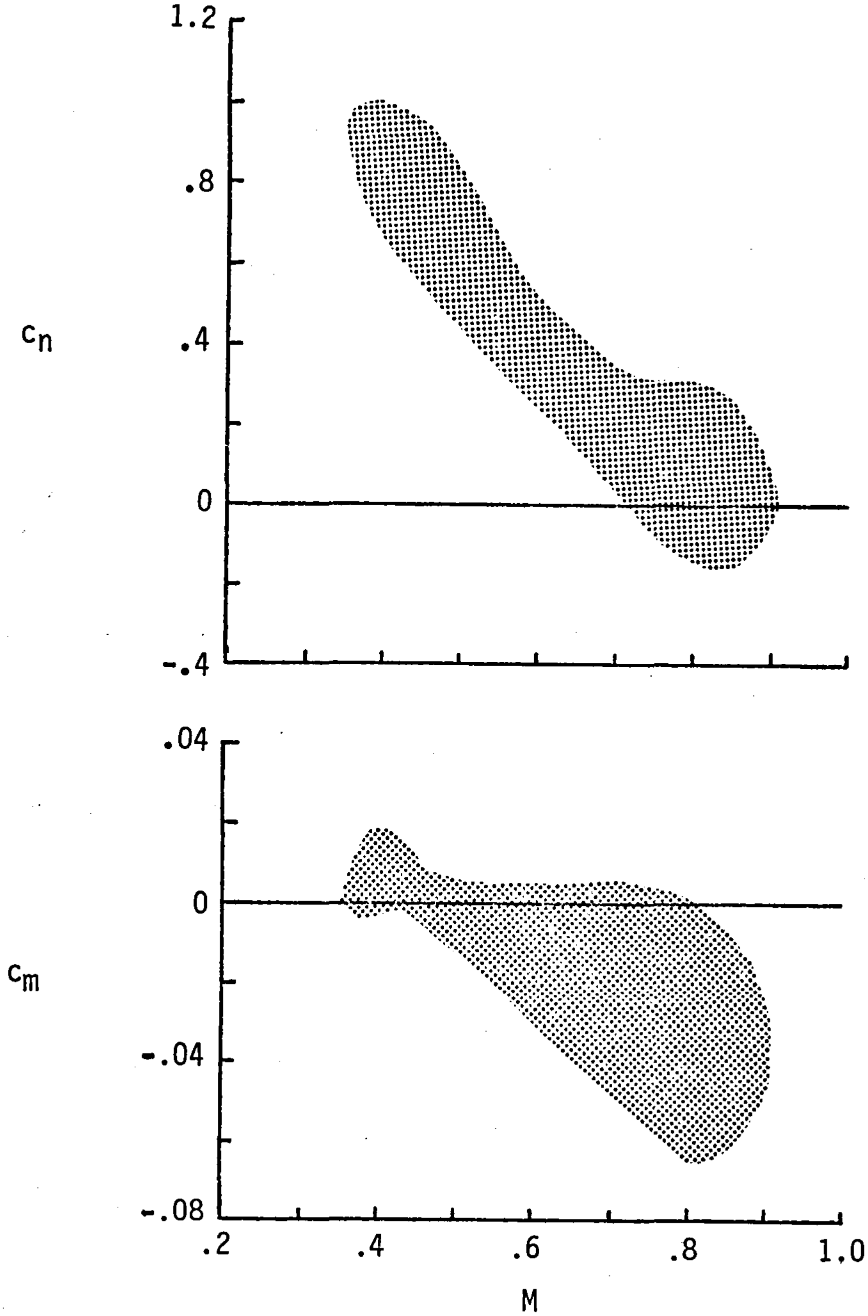
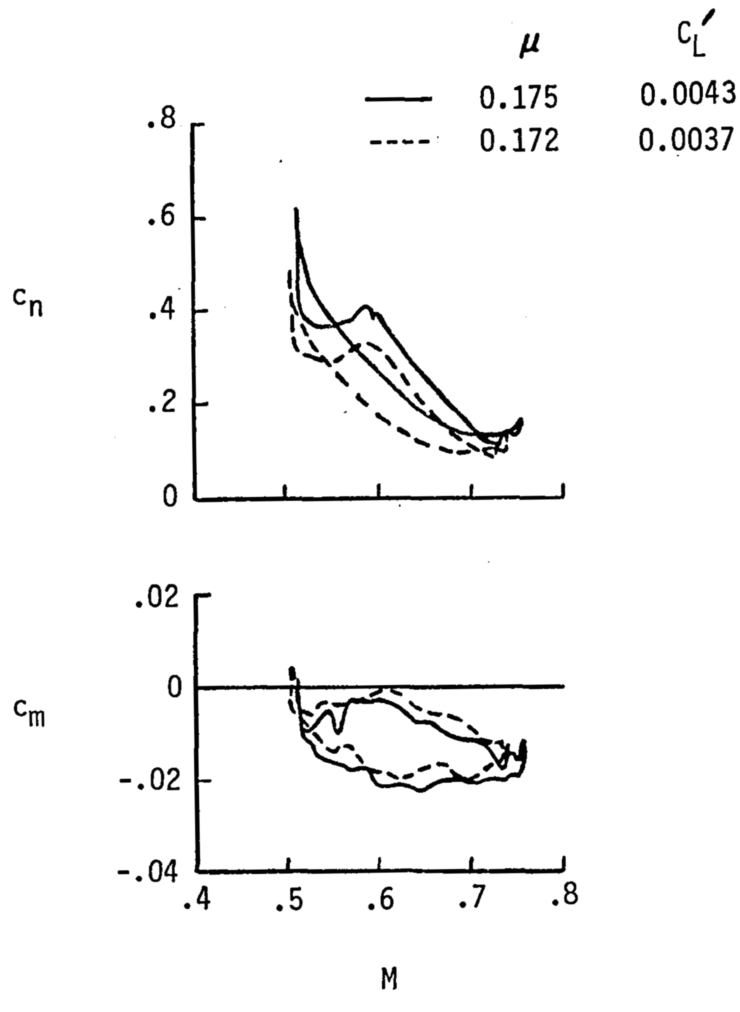
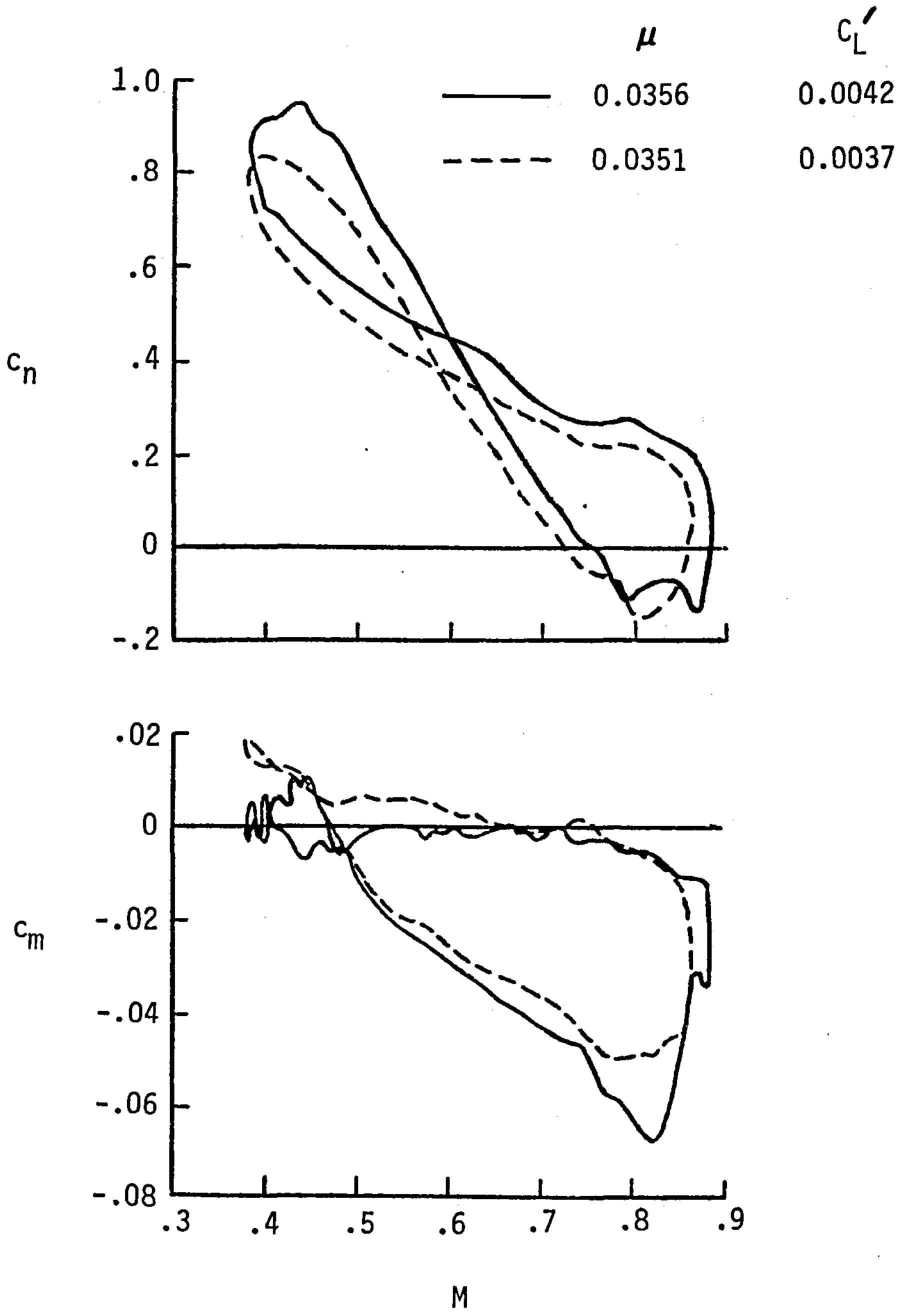



Figure 22.- Envelope of blade-section aerodynamic operating conditions (Flight 63, Appendix E). $\overline{C}_L' = 0.0043$; $\overline{M}_h = 0.70$; $r/R = 0.9$.




(a) Low-speed flight

Figure 23.- Comparison of blade-section operating conditions for two values of vehicle load coefficient. $M_h$ = 0.69; r/R = 0.9.




(b) High-speed flight

Figure 23.- Concluded.

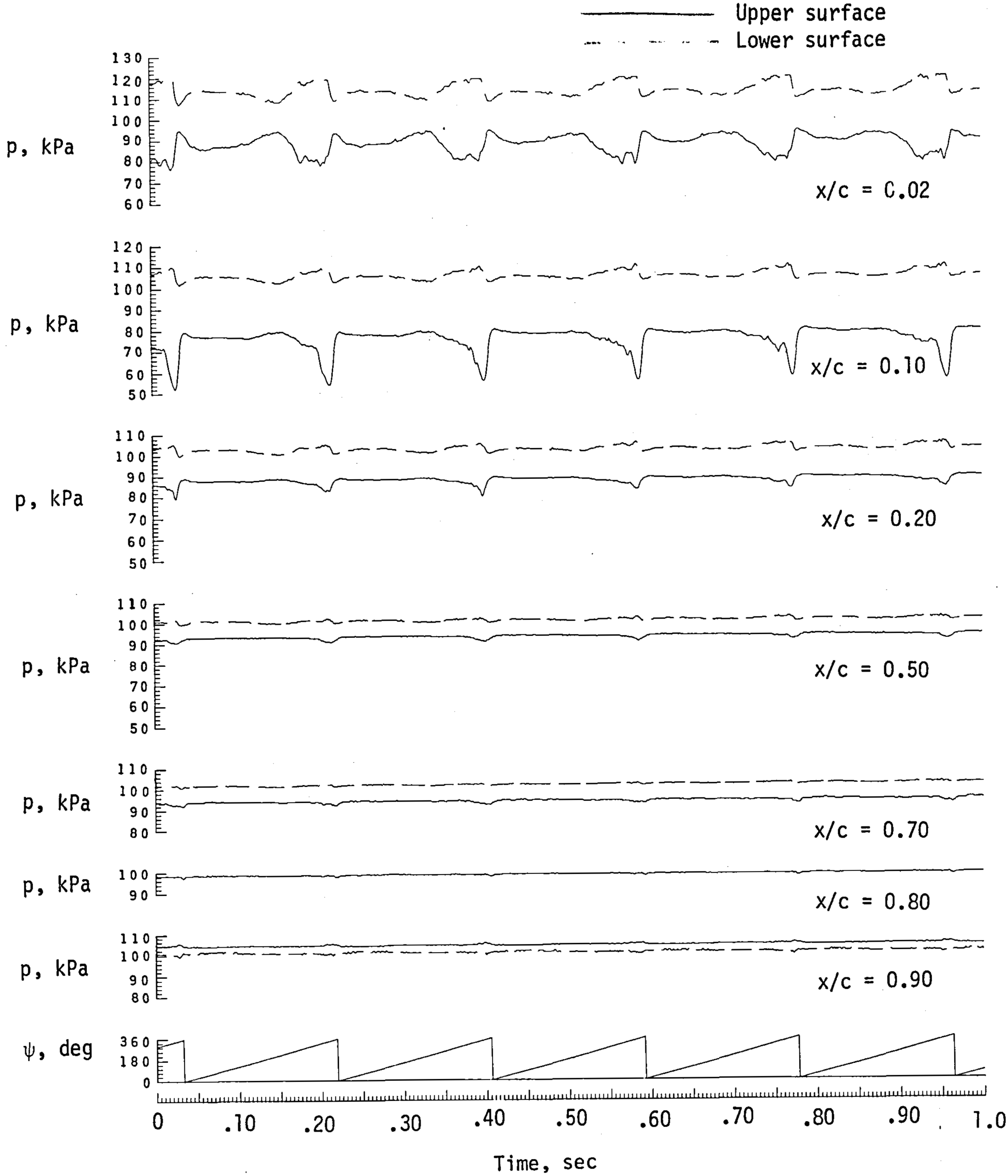



Figure 24.- History of uncorrected, local blade pressures and rotor azimuth for hover. $C_L'$ = 0.0039; $\Delta h/R$ = 1.9; $r/R$ = 0.9.

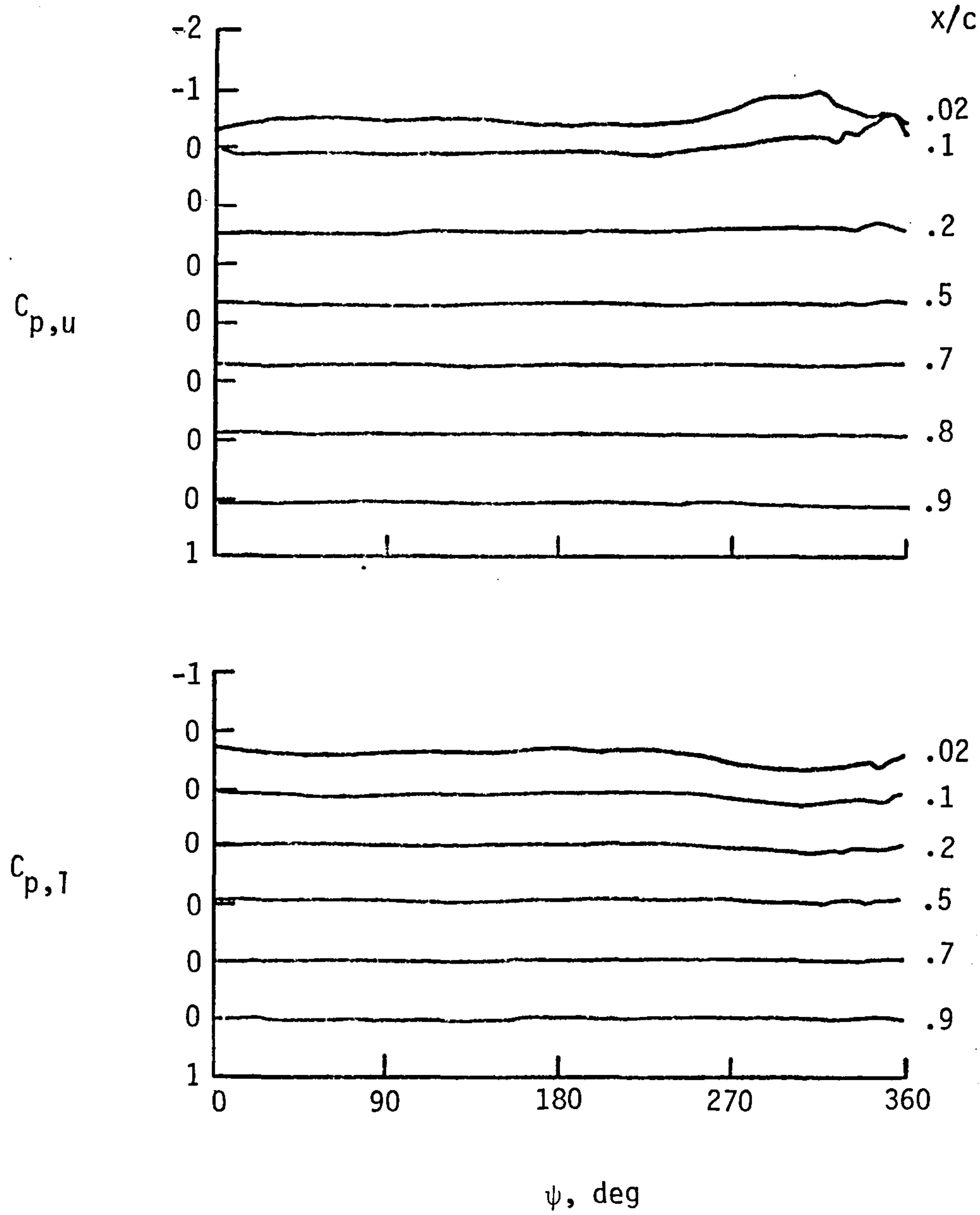
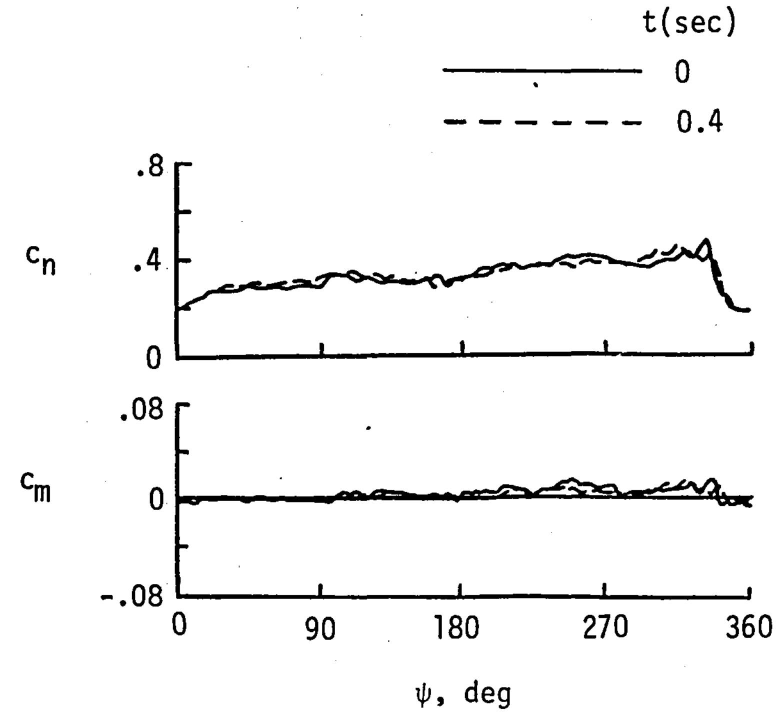
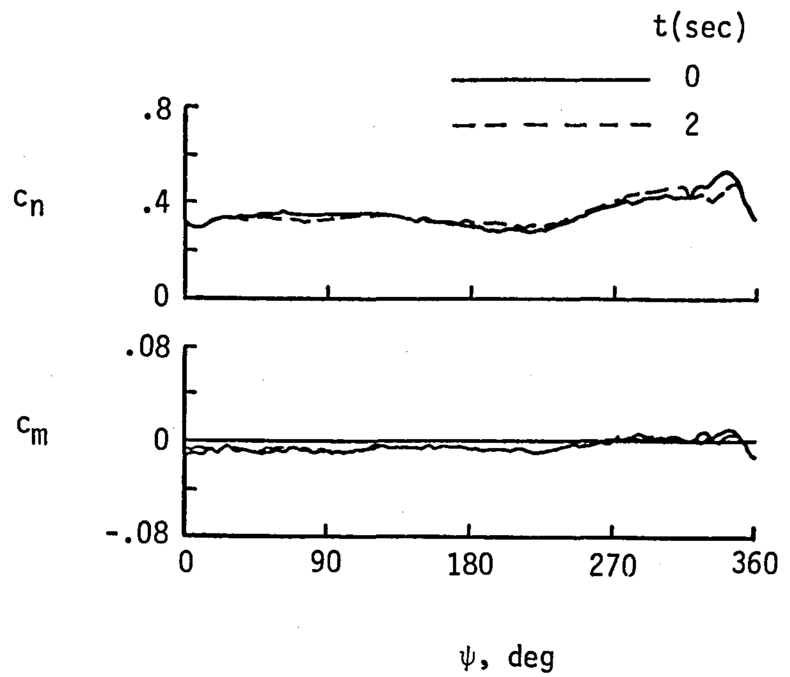



Figure 25.- Pressure coefficient records for one revolution in hover. $C_L{}' = 0.0039$; $M_h = 0.68$; $\Delta h/R \approx 1.9$; $r/R = 0.9$.




(a) $C_L' = 0.0037$




(b) $C_L' = 0.0039$

Figure 26.- Blade-section characteristics for two revolutions at the same hover test condition. $M_h = 0.68$; $\Delta h/R = 1.9$; $r/R = 0.9$.

| | $M_h$ | $C_L'$ | $A_{0f}$ | $A_{1f}$ | $B_{1f}$ | $\Delta h/R$ |
|---|---|---|---|---|---|---|
| ——— | 0.69 | 0.0034 | 9.2 | -2.1 | .4 | 3.2 |
| ---- | 0.68 | 0.0037 | 10.2 | -2.9 | .9 | 1.9 |
| —— - | 0.68 | 0.0039 | 10.0 | -2.8 | -2.4 | 1.9 |

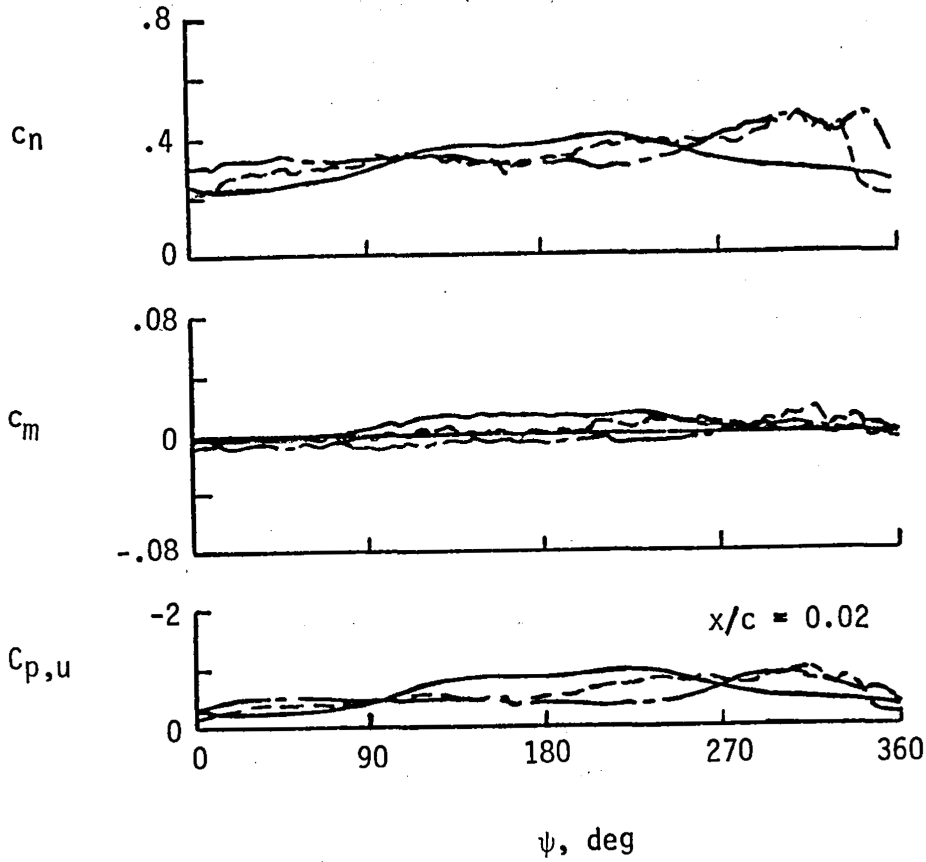
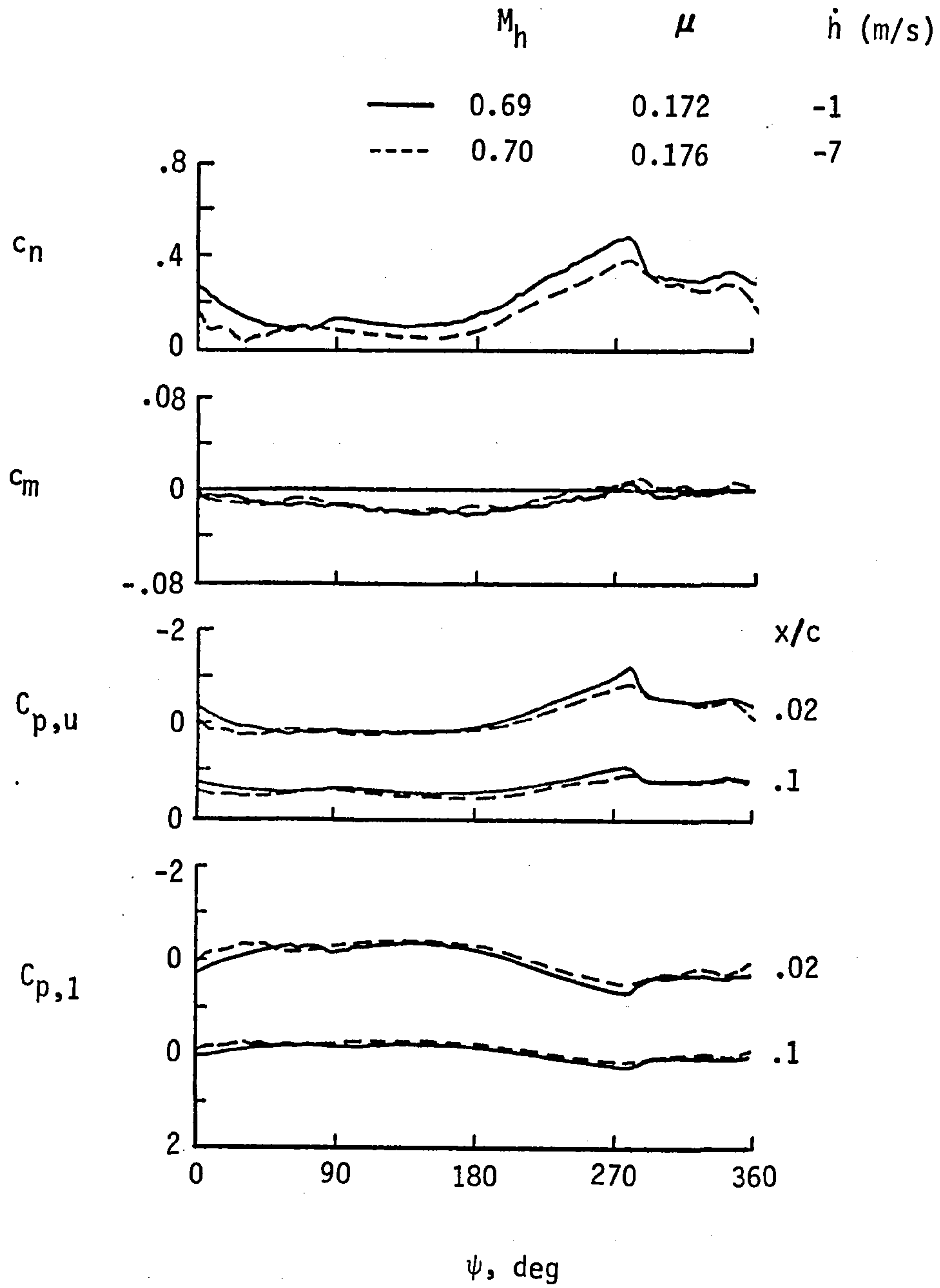
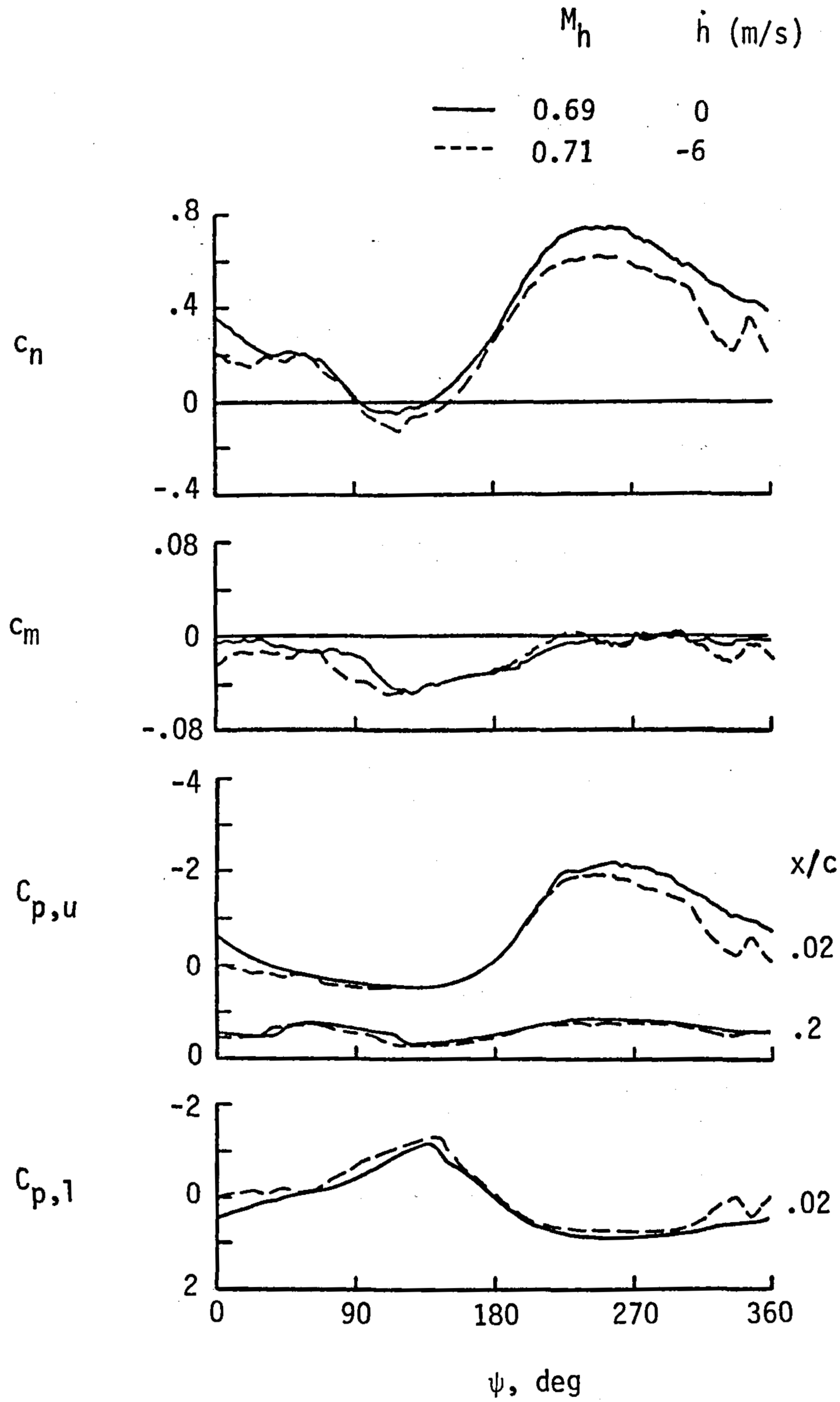



Figure 27.- Blade-section aerodynamics for one revolution at each of three hover test conditions.




(a) Moderate tip-speed ratio; $C_L{}' = 0.0037$

Figure 28.- Blade-section pressure data for one rotor revolution in descending flight.




(b) $\mu = 0.30$; $C_L{}' = 0.0042$

Figure 28.- Concluded.

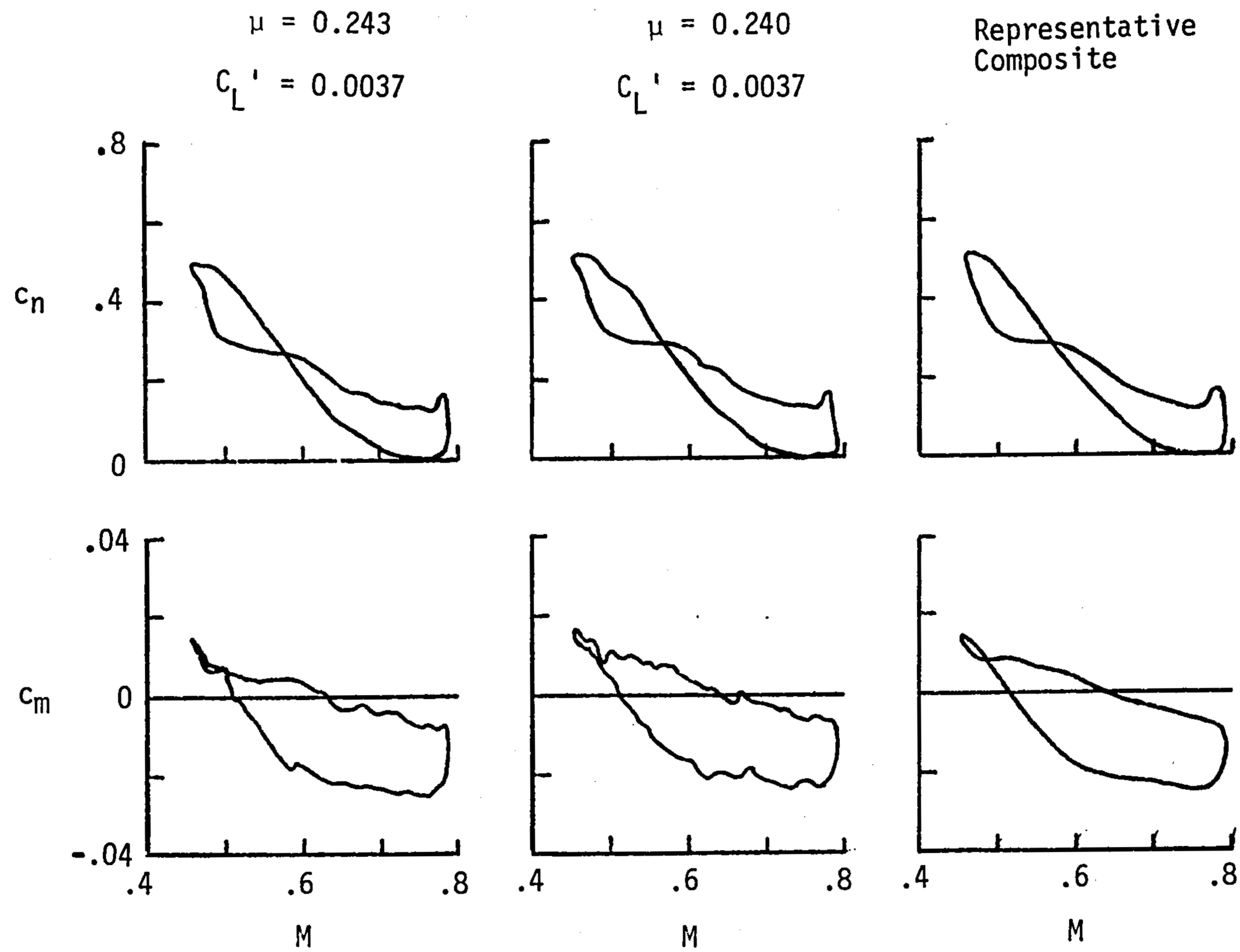



Figure 29.- Measured and representative blade-section operating conditions for level flight. $\mu \approx 0.24$; $r/R = 0.9$.

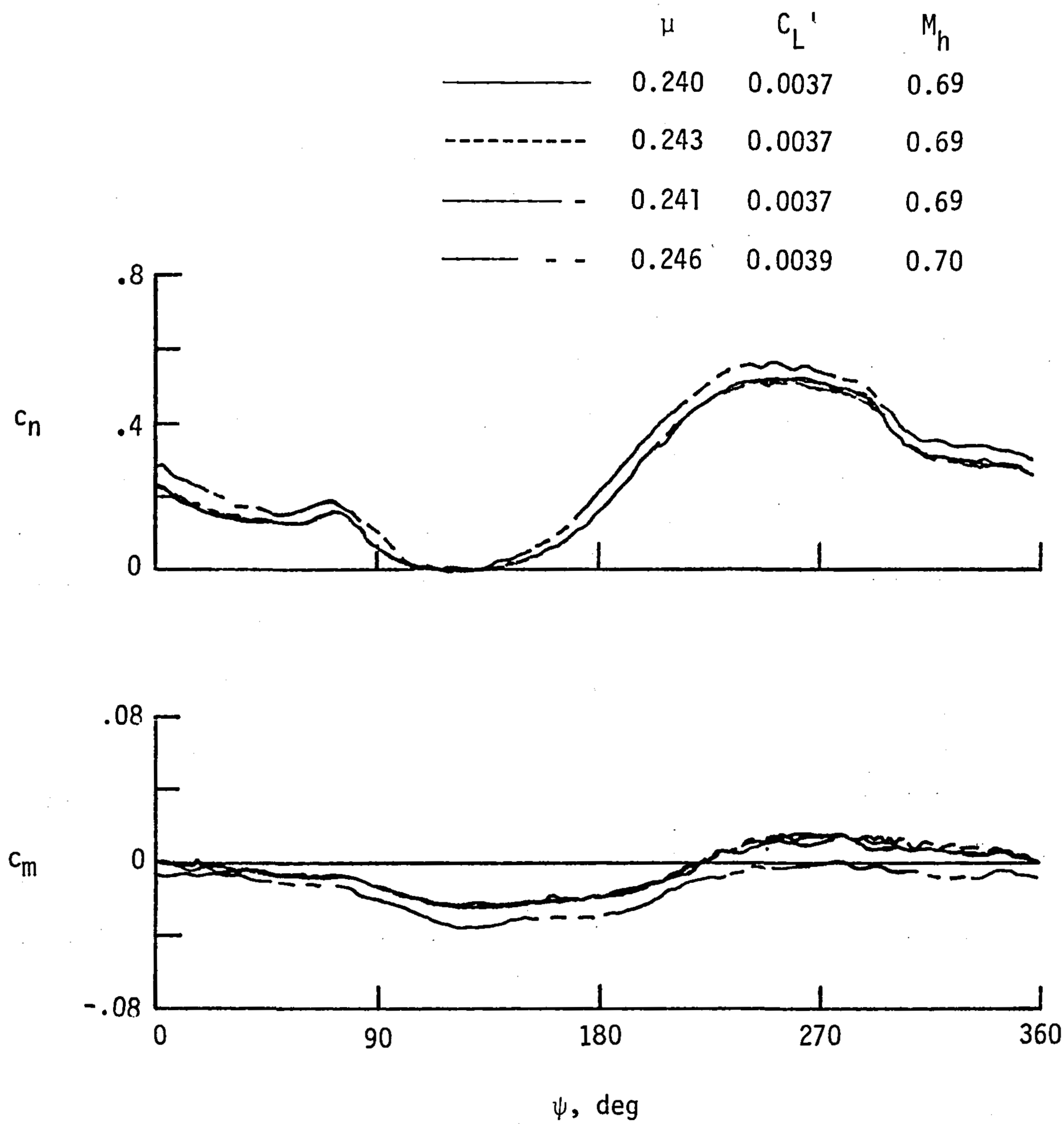



Figure 30.- Azimuthwise distribution of normal-force and pitching-moment coefficients for level flight. $\mu = 0.24$; $r/R = 0.9$.

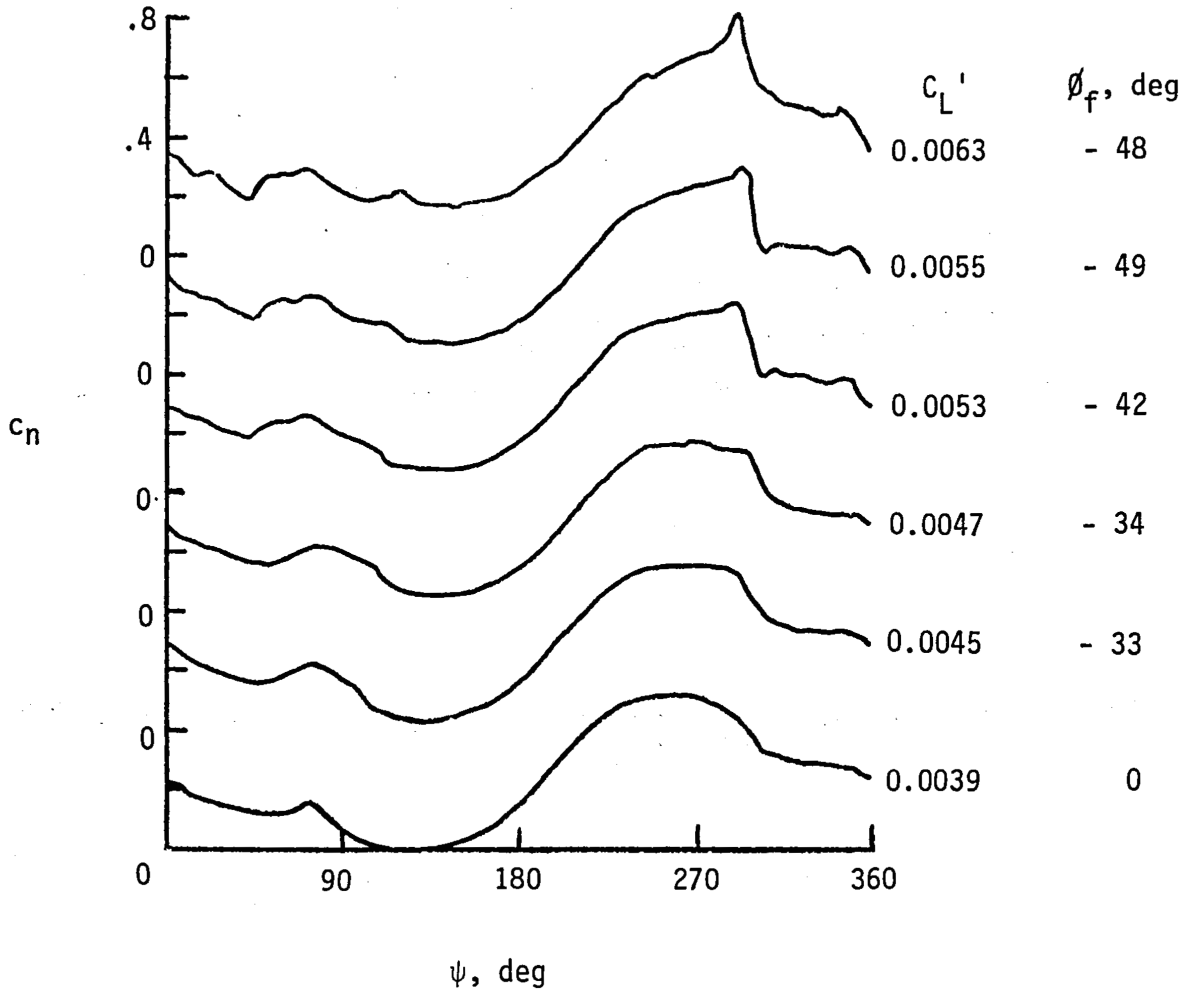



Figure 31.- Effect of rotor load on azimuthwise distribution of blade-section normal-force coefficient for descending left turn. $\overline{\mu} = 0.242$; $\overline{M}_h = 0.70$; $r/R = 0.9$.

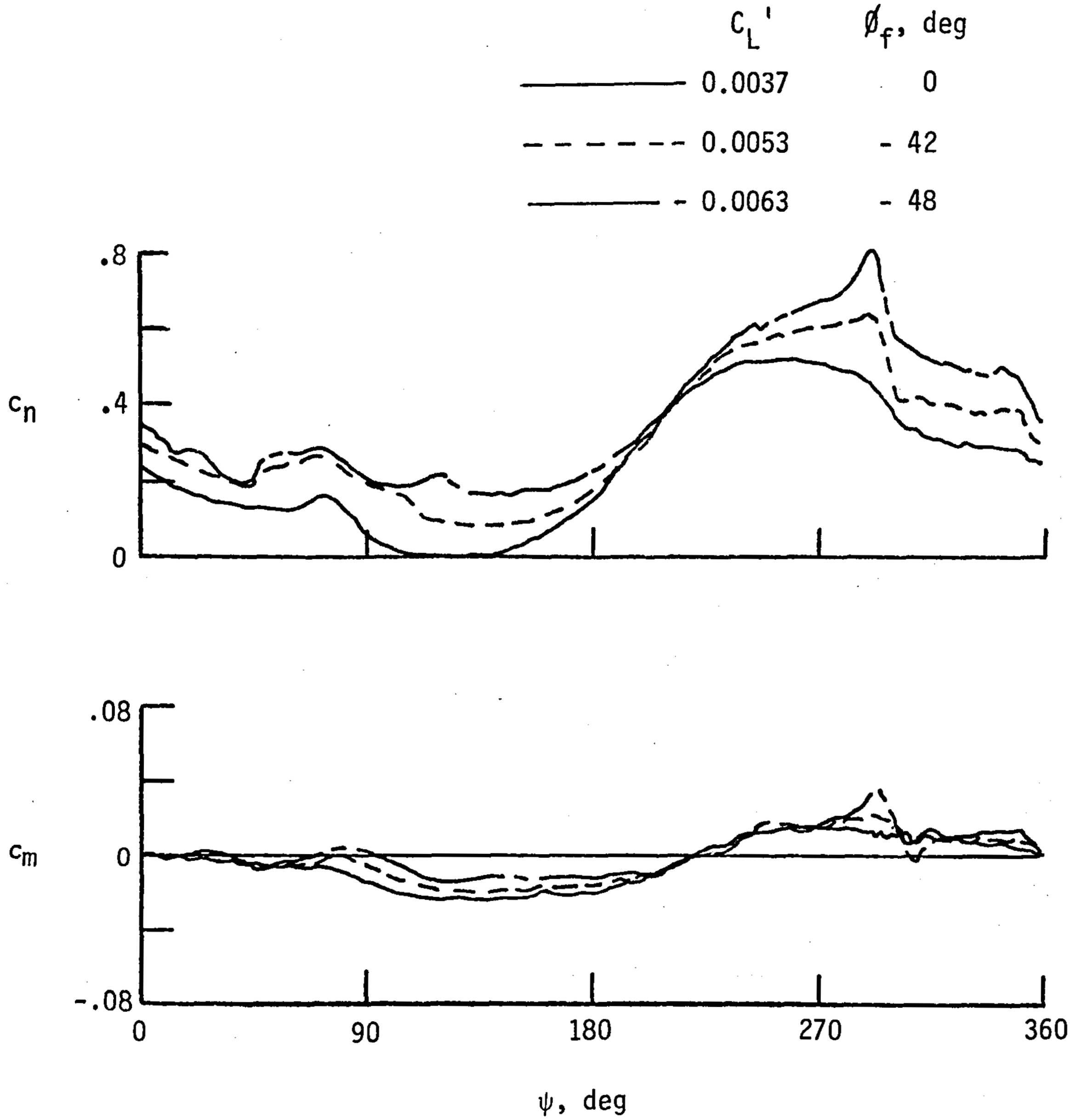



Figure 32.- Comparison of azimuthwise distributions of blade-section aerodynamic characteristics for descending left turns and level flight. $\bar{\mu}$ = 0.242; $\bar{M}_h$ = 0.70; r/R = 0.9.

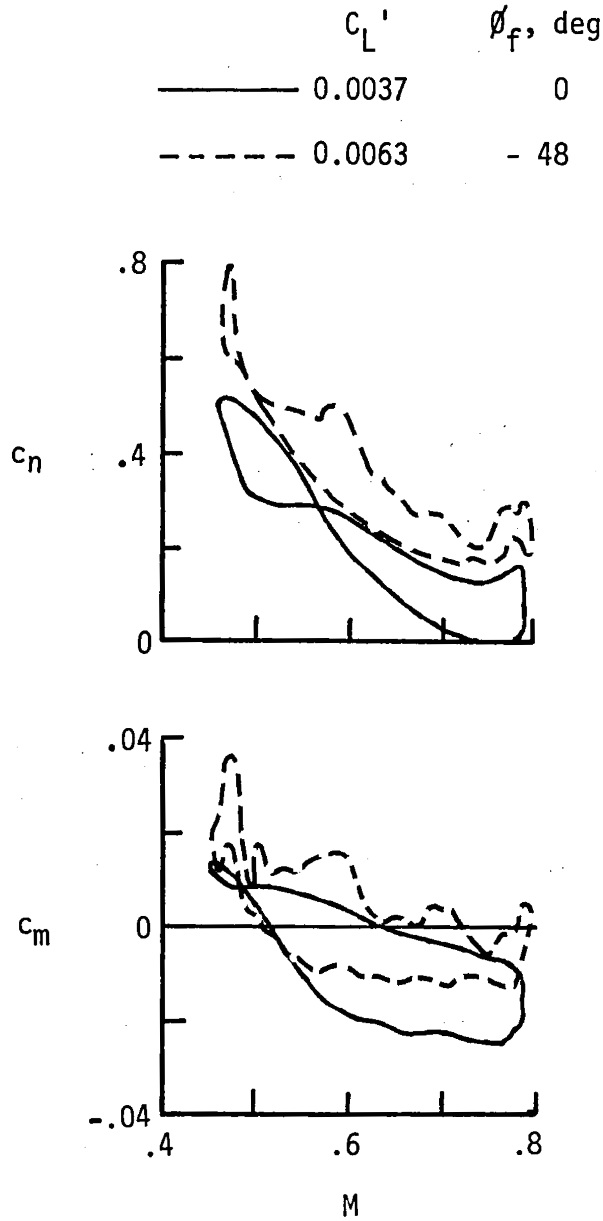



Figure 33.- Comparison of blade-section operating conditions for left turn and reference level-flight condition. $\mu = 0.24$; $M_h = 0.7$; $r/R = 0.9$.

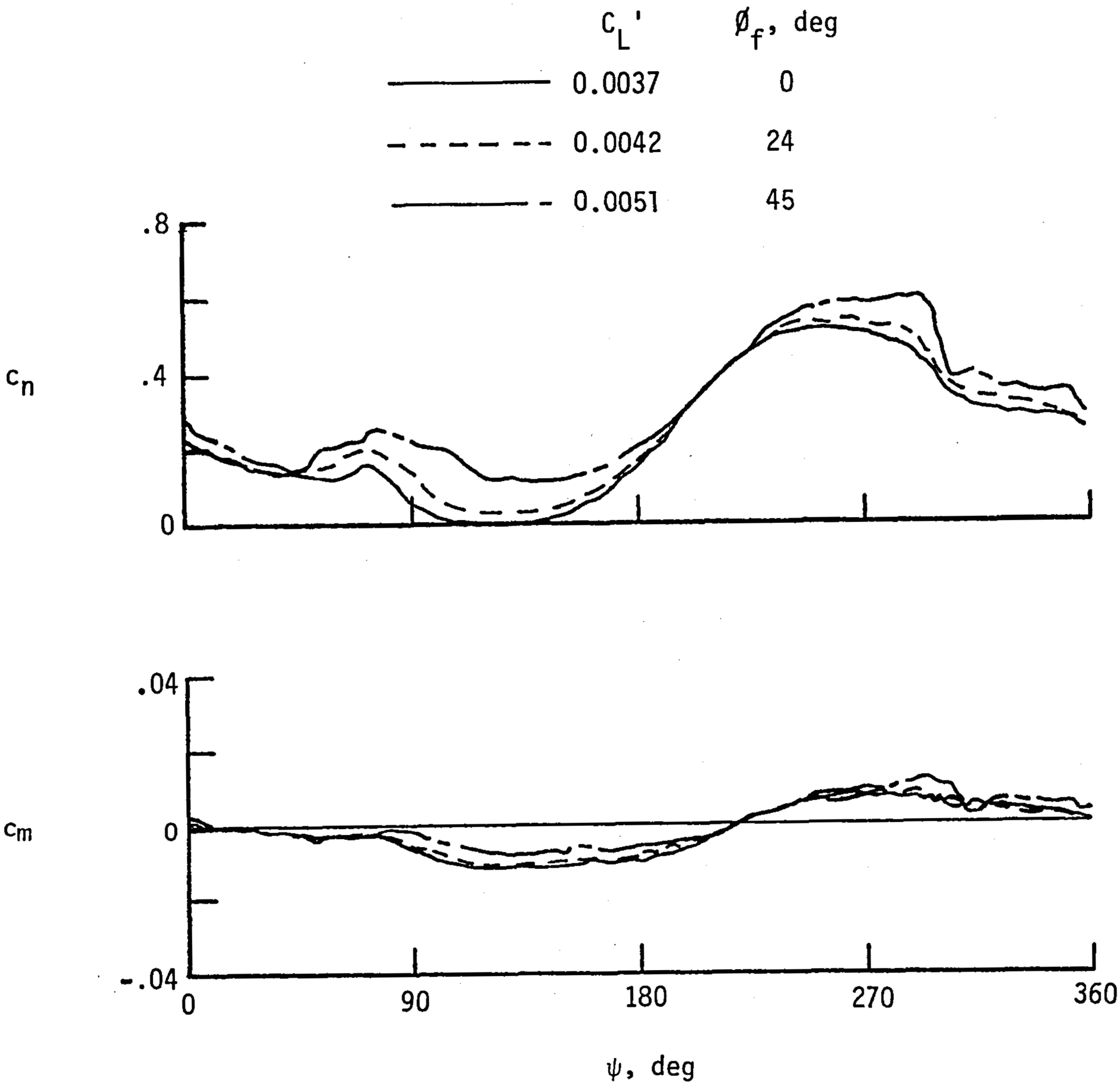



Figure 34.- Comparison of azimuthwise distributions of blade-section aerodynamic characteristics for descending right turns and level flight. $\bar{\mu}$ = 0.24; r/R = 0.9.

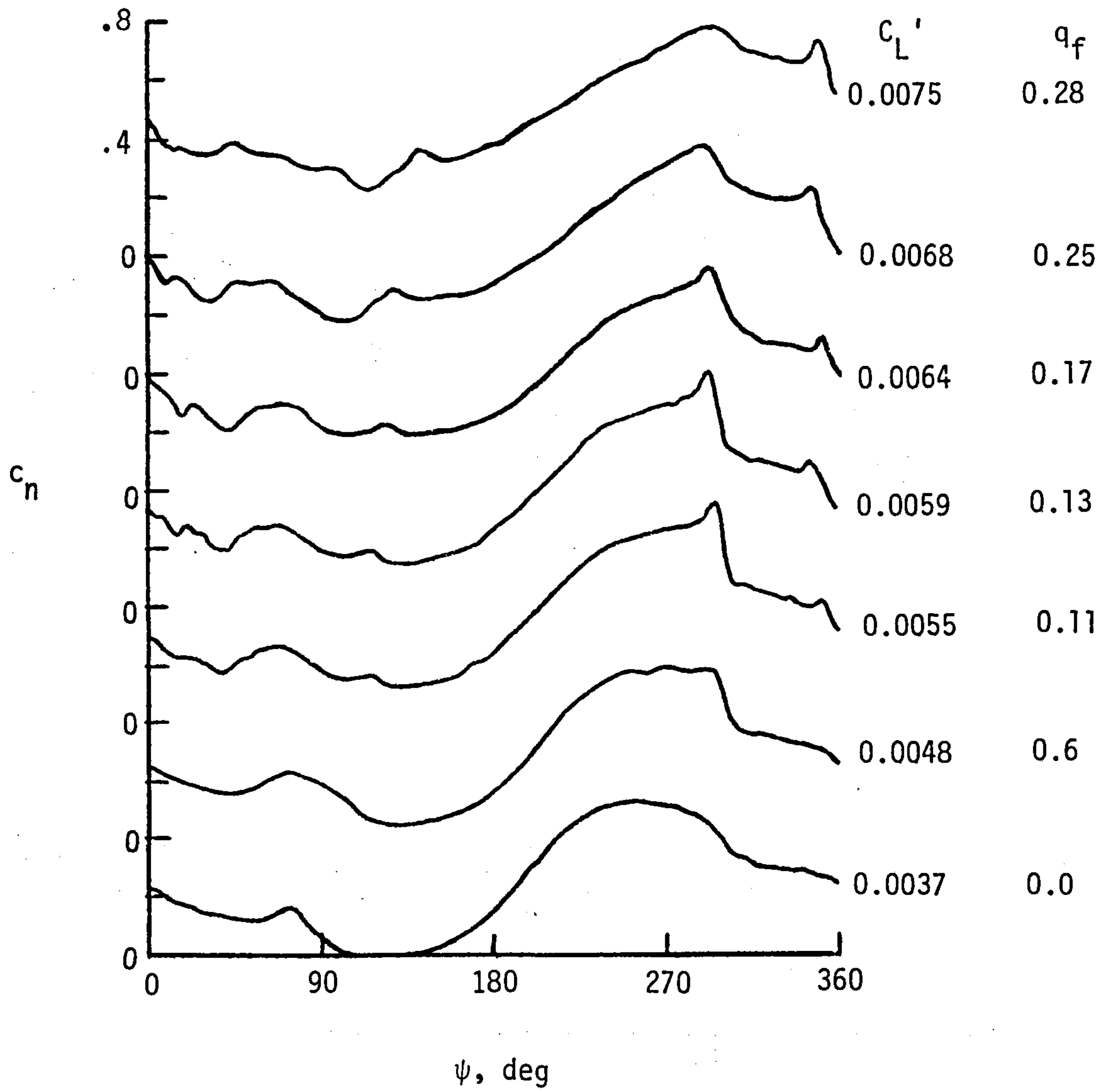



Figure 35.- Effect of rotor load on azimuthwise distribution of blade-section normal-force coefficient for symmetrical pull-ups. $\overline{\mu} = 0.242$; $\overline{M}_h = 0.70$; $r/R = 0.9$.

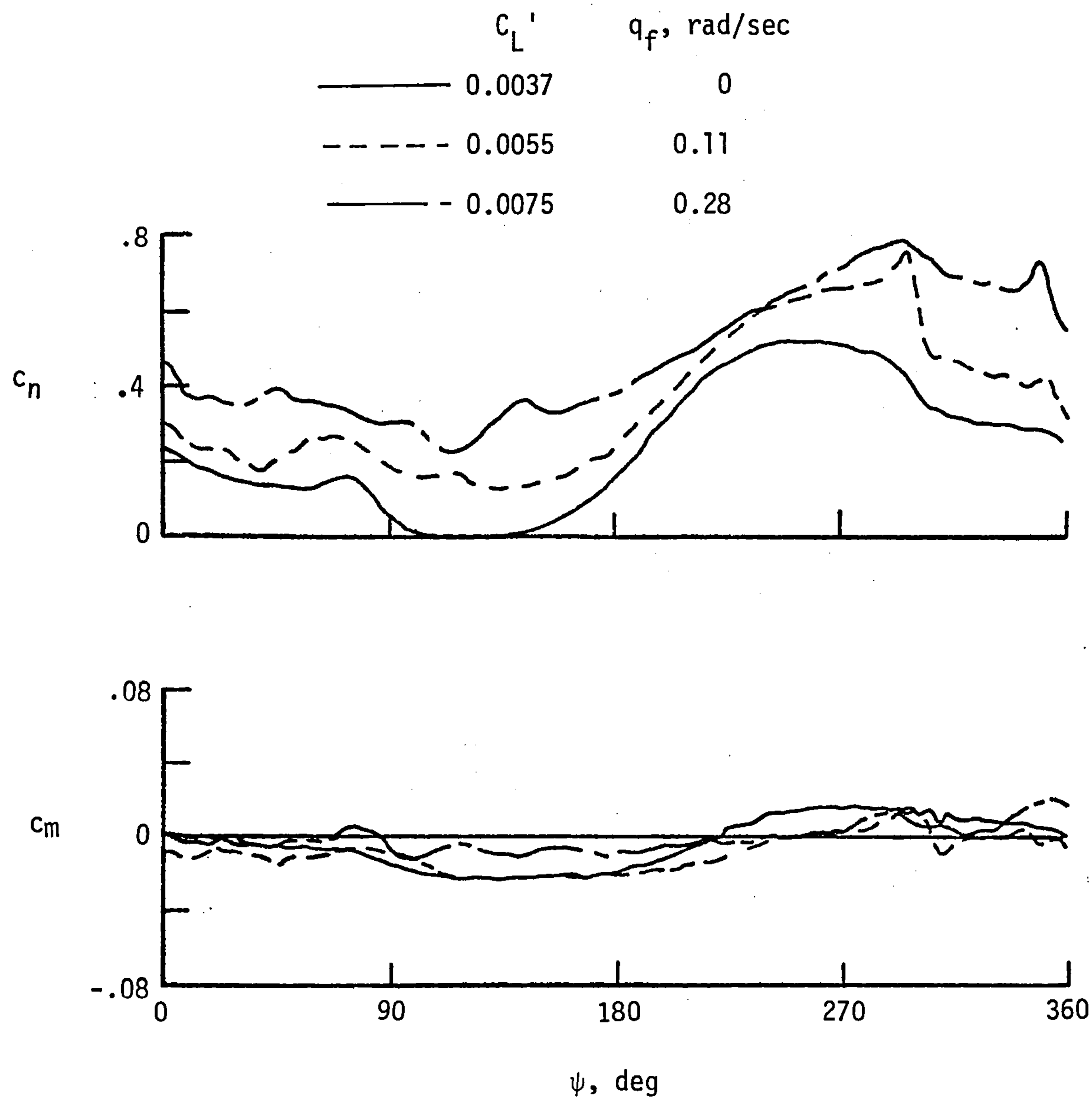



Figure 36.- Comparison of azimuthwise distributions of blade-section aerodynamic characteristics for symmetrical pull-ups and level flight. $\bar{\mu}$ = 0.245; $\bar{M}_h$ = 0.70; r/R = 0.9.

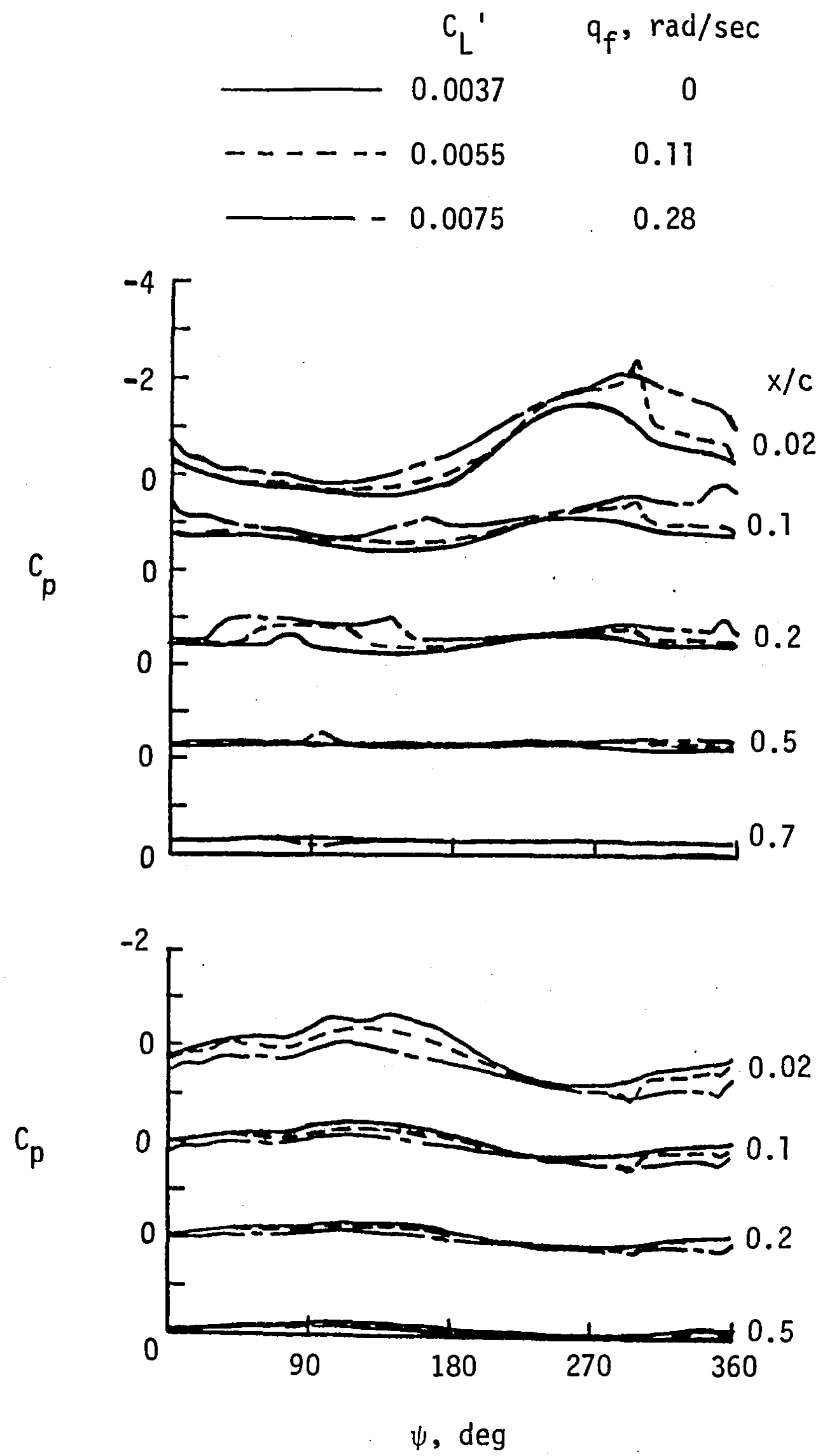



Figure 37.- Azimuthwise distributions of local pressure coefficient for two symmetrical pull-ups and level flight. $\overline{\mu} = 0.245$; $\overline{M}_h = 0.70$; $r/R = 0.9$.

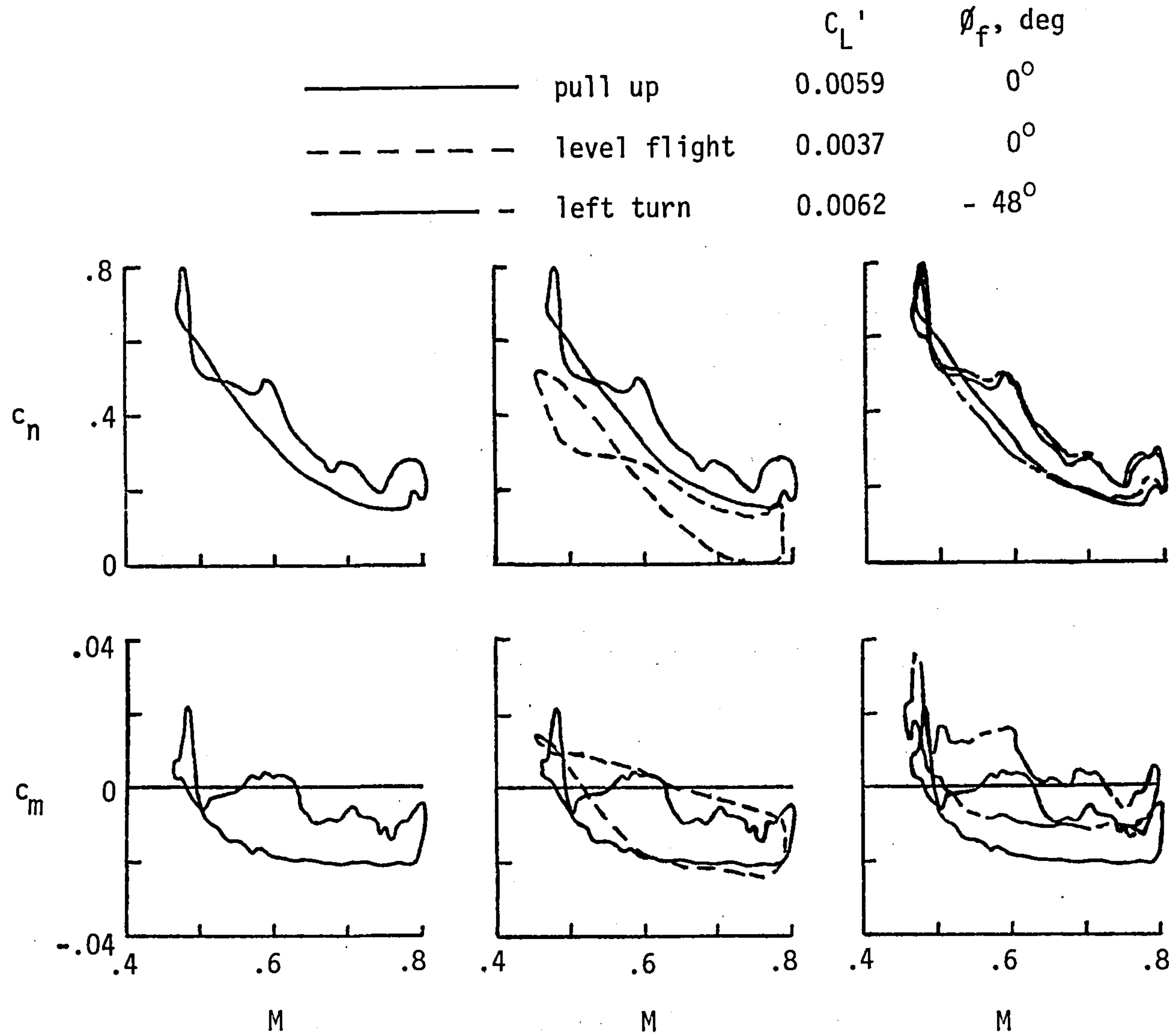



Figure 38.- Comparison of blade-section operating conditions for a symmetrical pull-up, a descending left turn, and level flight. $\overline{\mu} = 0.24$; $\overline{M}_h = 0.70$; $r/R = 0.9$.

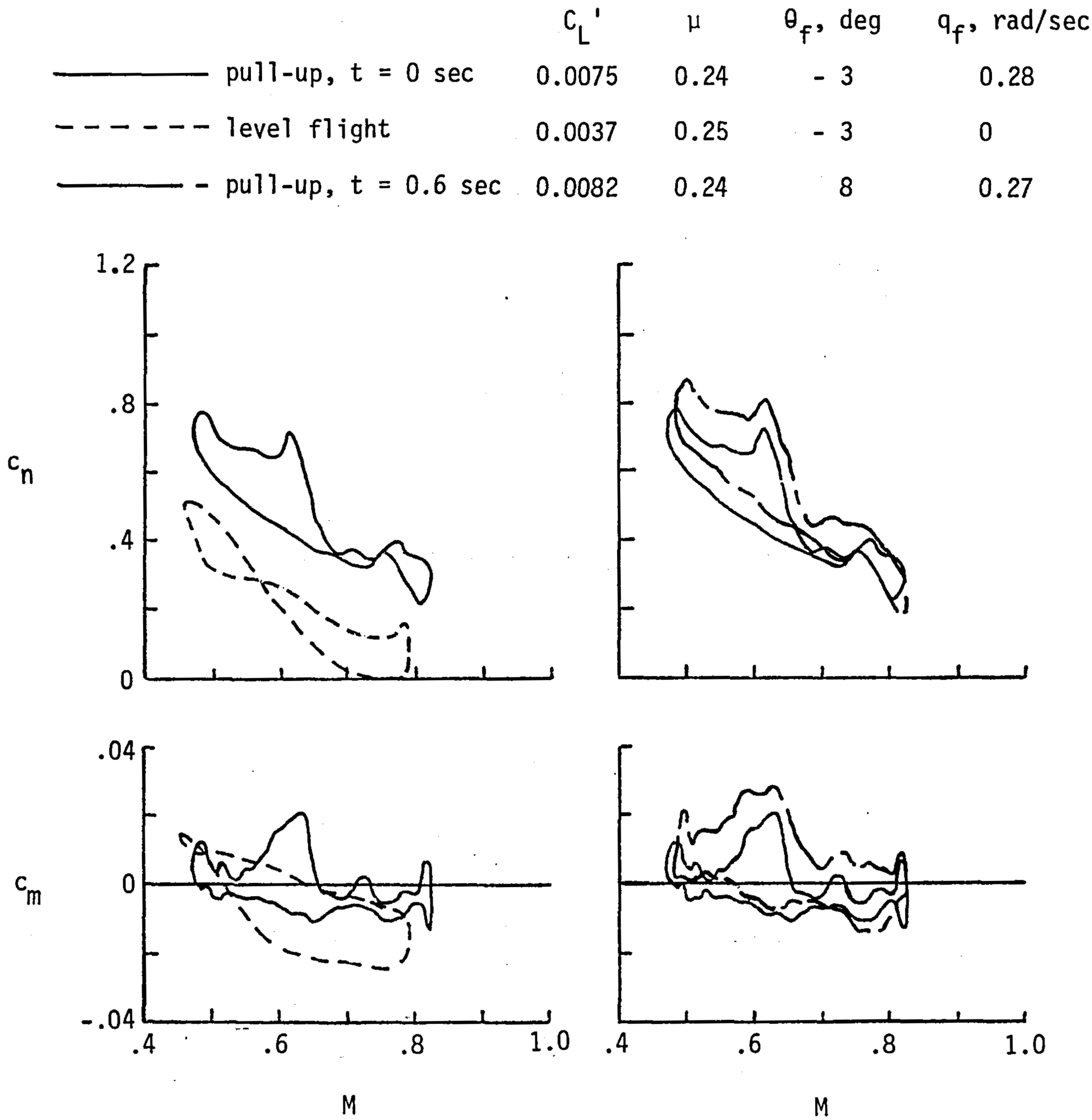



Figure 39.- Comparison of blade-section operating conditions for two rotor revolutions in the same pull-up maneuver and in level flight. r/R = 0.9.

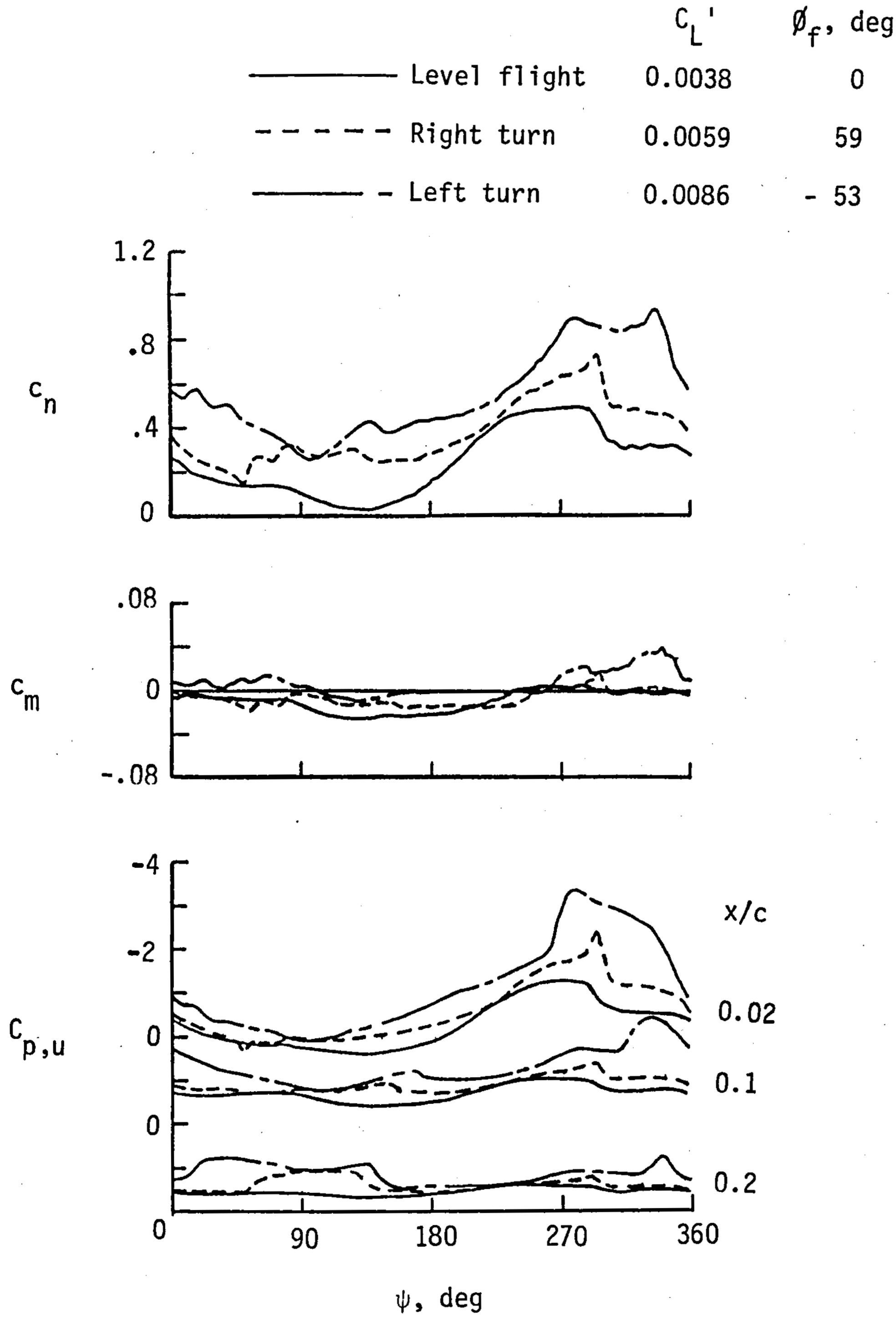



Figure 40.- Comparison of blade-section pressure data for level flight and two maneuvers. $\mu = 0.22$; $r/R = 0.9$.

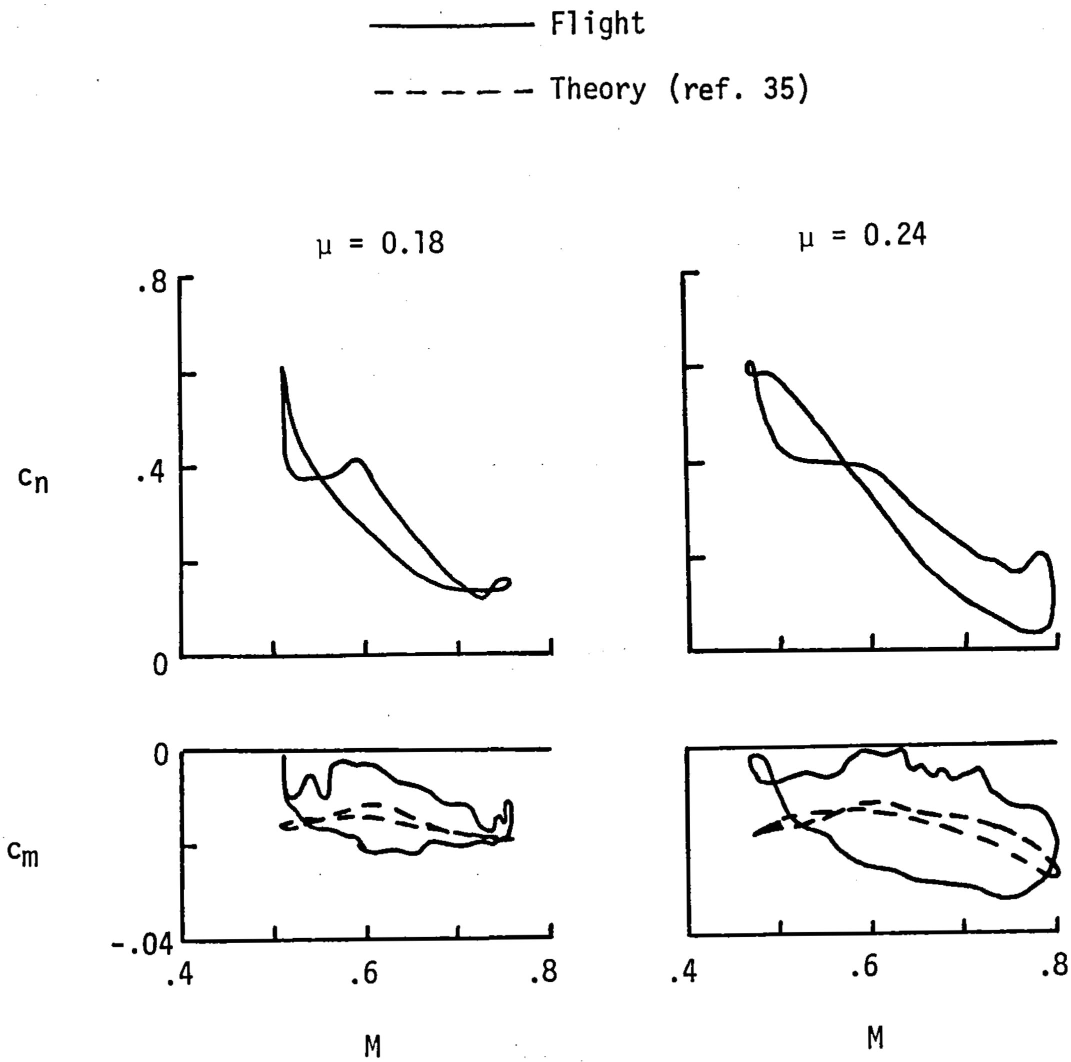



Figure 41.- Comparison of pitching-moment coefficients measured in flight with values computed with measured $c_n$ and M as inputs to method of reference 35. r/R = 0.9.

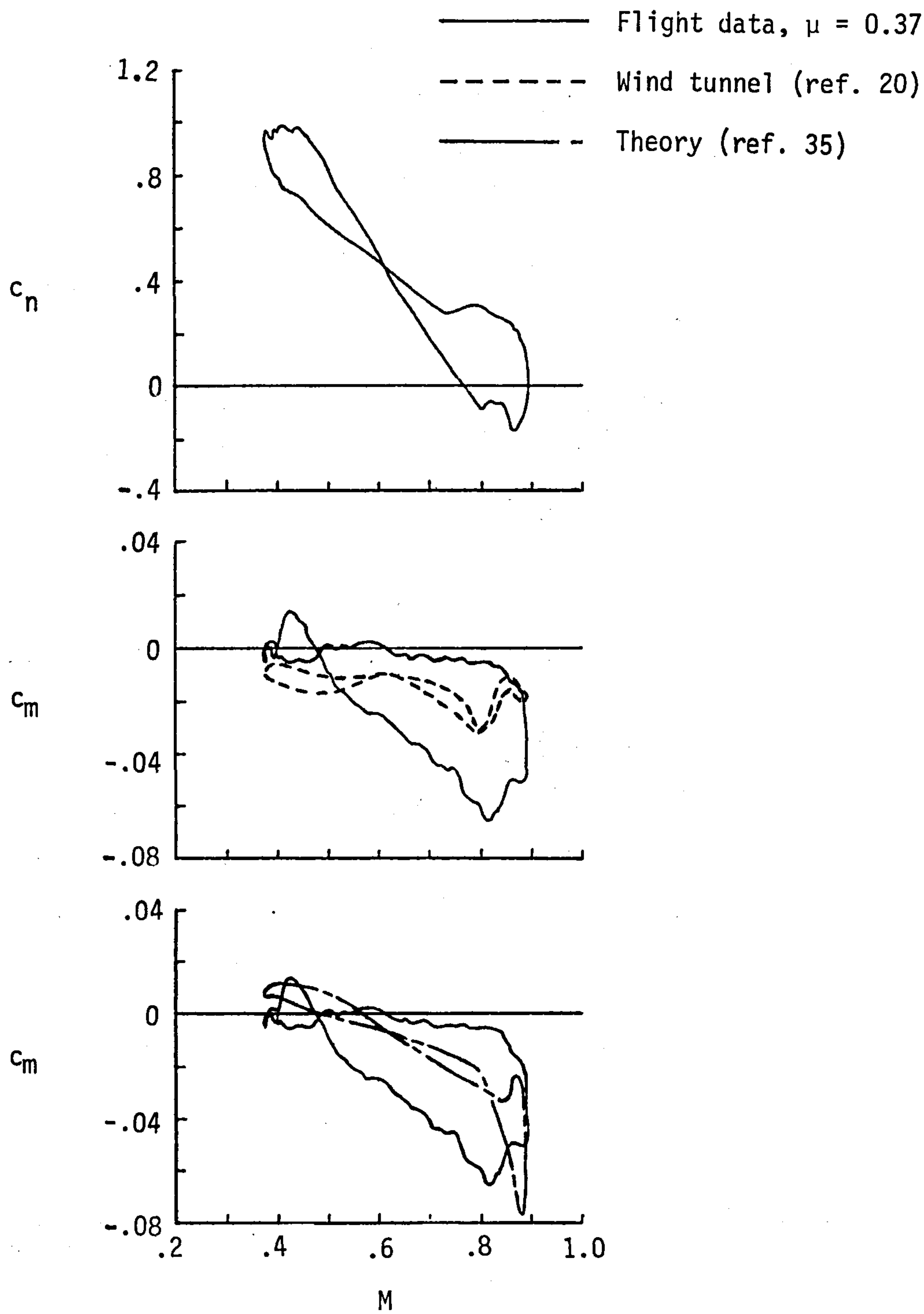
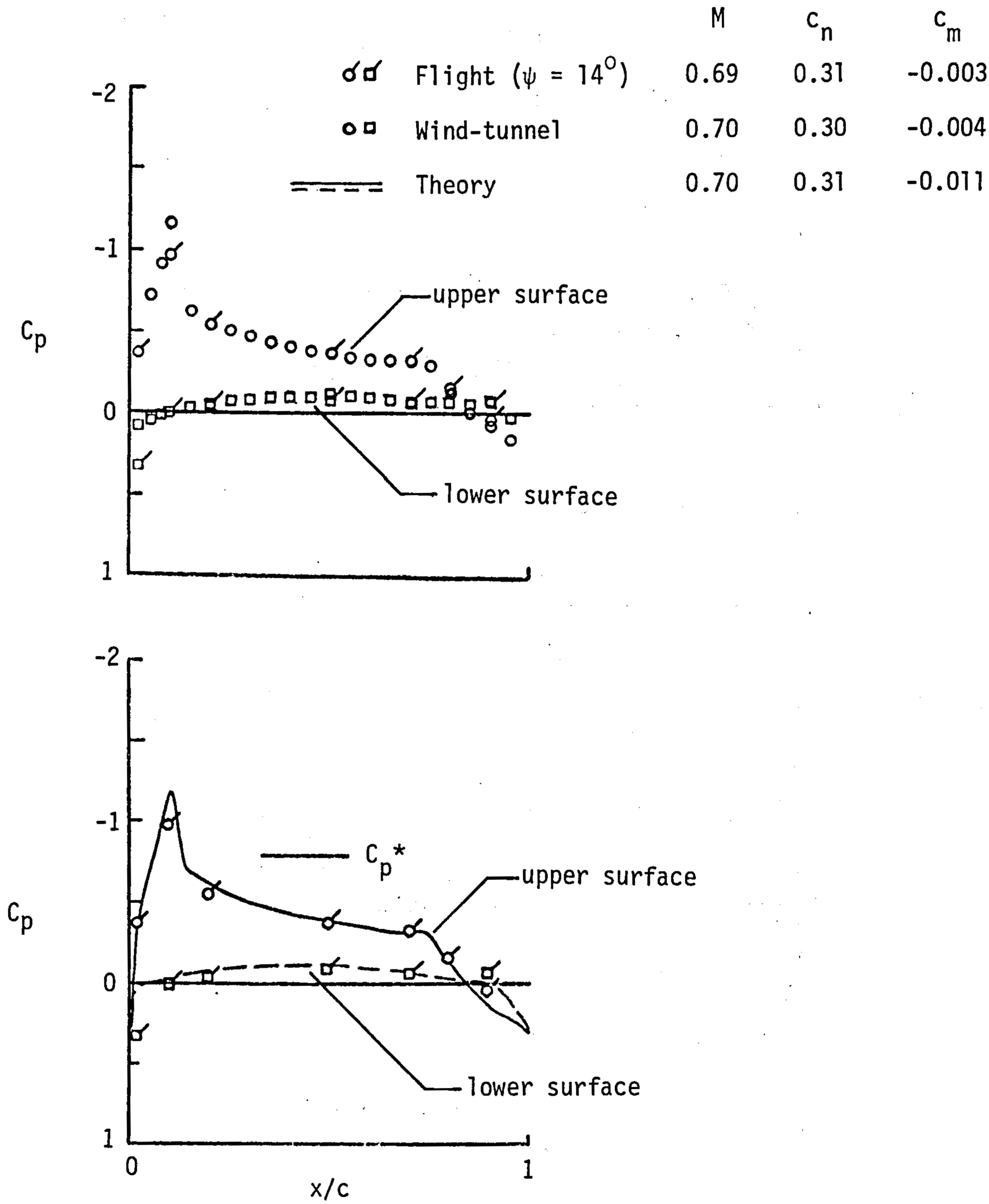
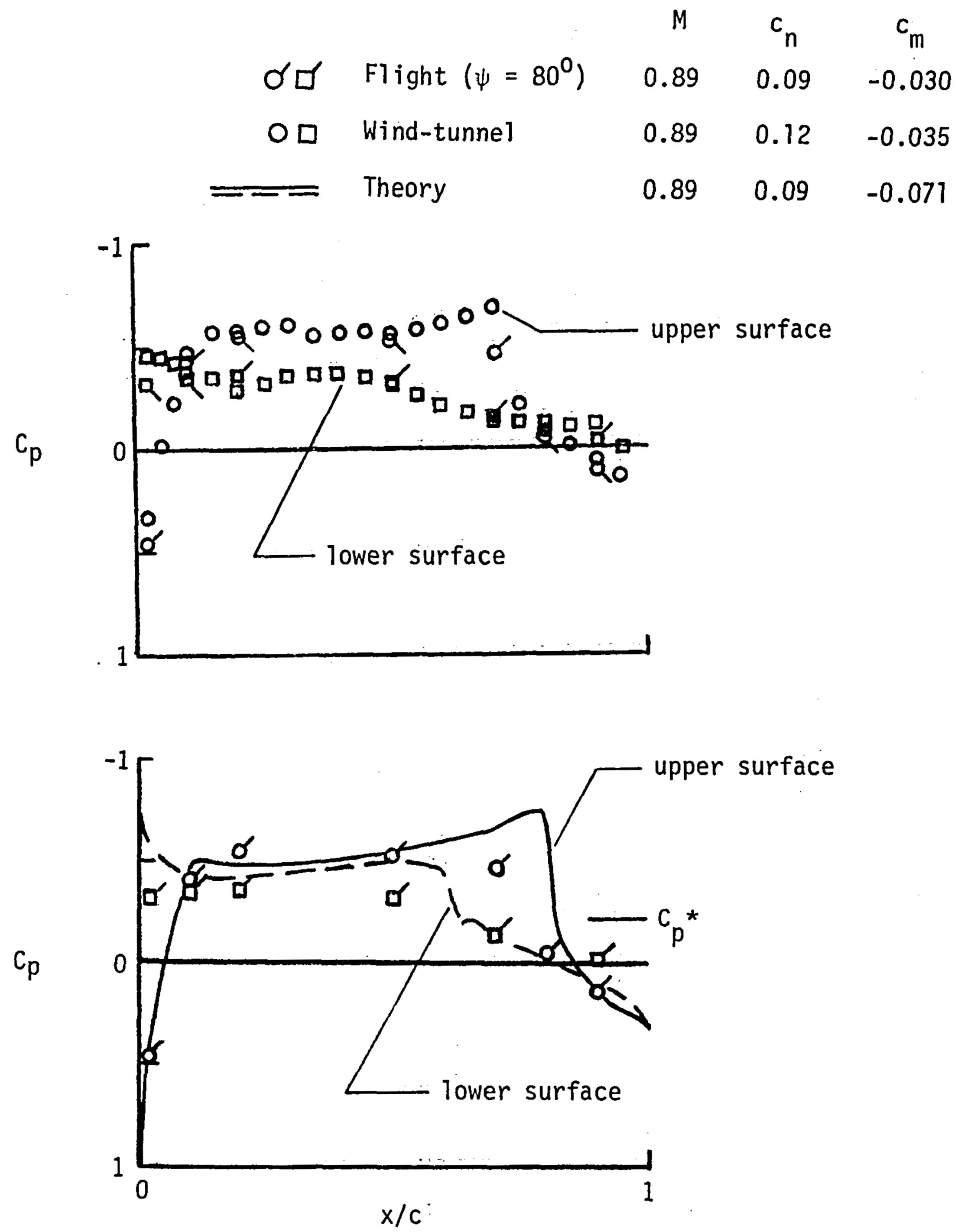



Figure 42.- Comparison of pitching-moment coefficient variation with Mach number for flight, wind-tunnel, and theoretical results for the same set of normal-force and Mach number values. r/R = 0.9.



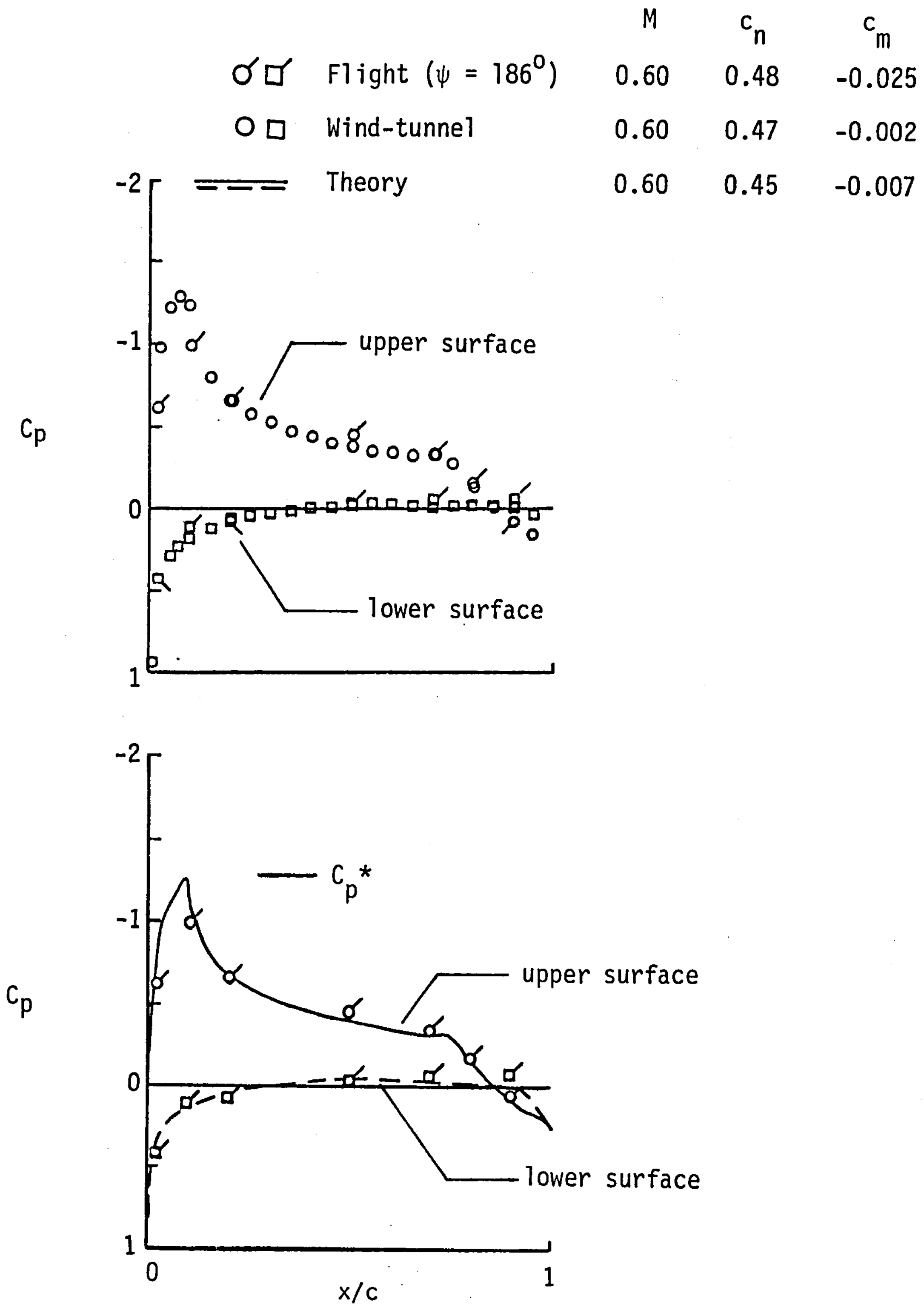

(a) $M \approx 0.70$; $c_n \approx 0.3$.

Figure 43.- Comparison of flight data, wind-tunnel data, and theoretical pressure distributions (ref. 35). (Flight 63, run 11 of Appendices D and E.)




(b) $M \approx 0.89$; $C_n \approx 0.1$

Figure 43.- Continued.




(c) $M \approx 0.60$; $C_n \approx 0.48$

Figure 43.- Concluded.

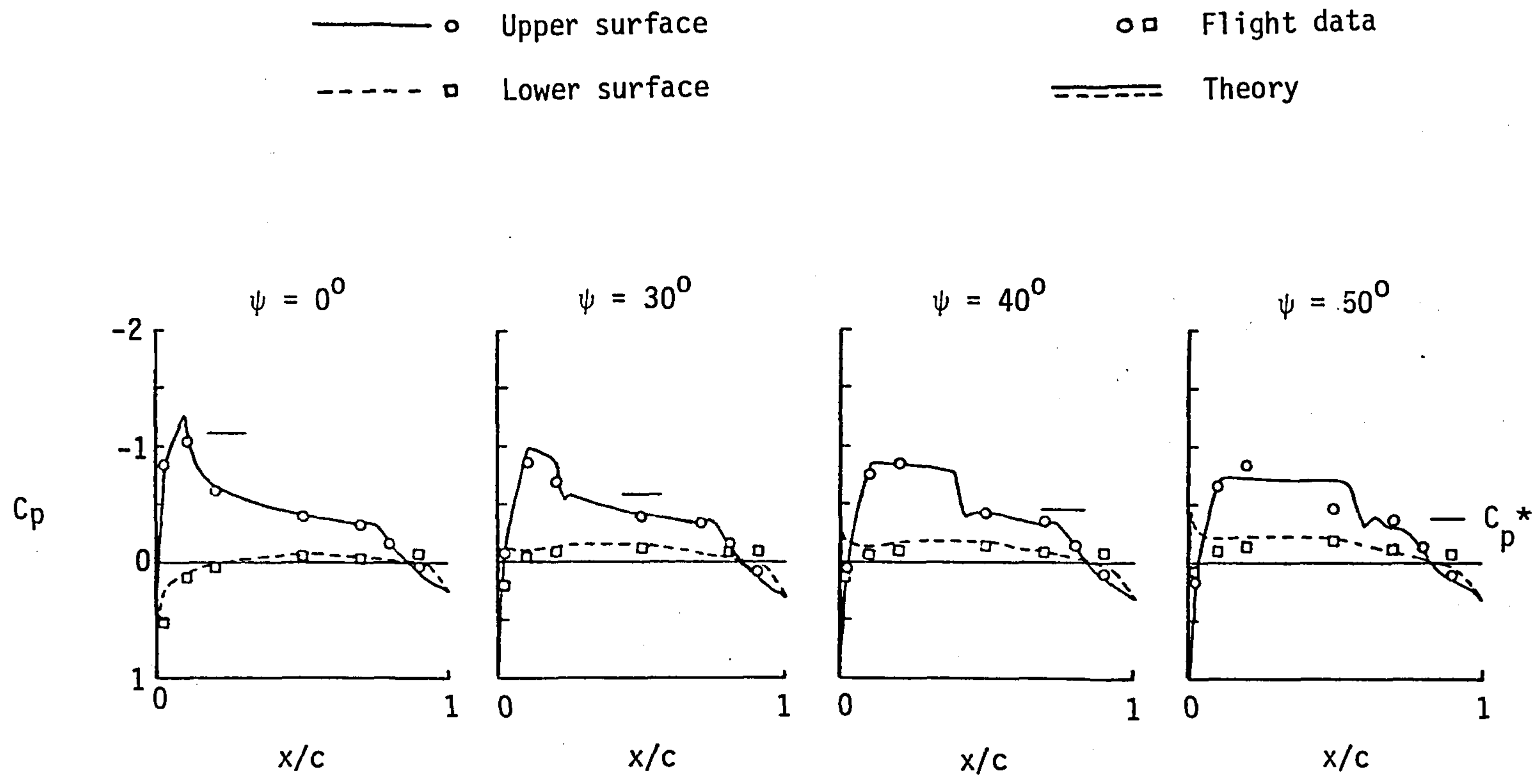



Figure 44.- Comparison of blade-section pressure distributions from theory and flight tests (Flight 63, run 11 of Appendices D and E); r/R = 0.9.

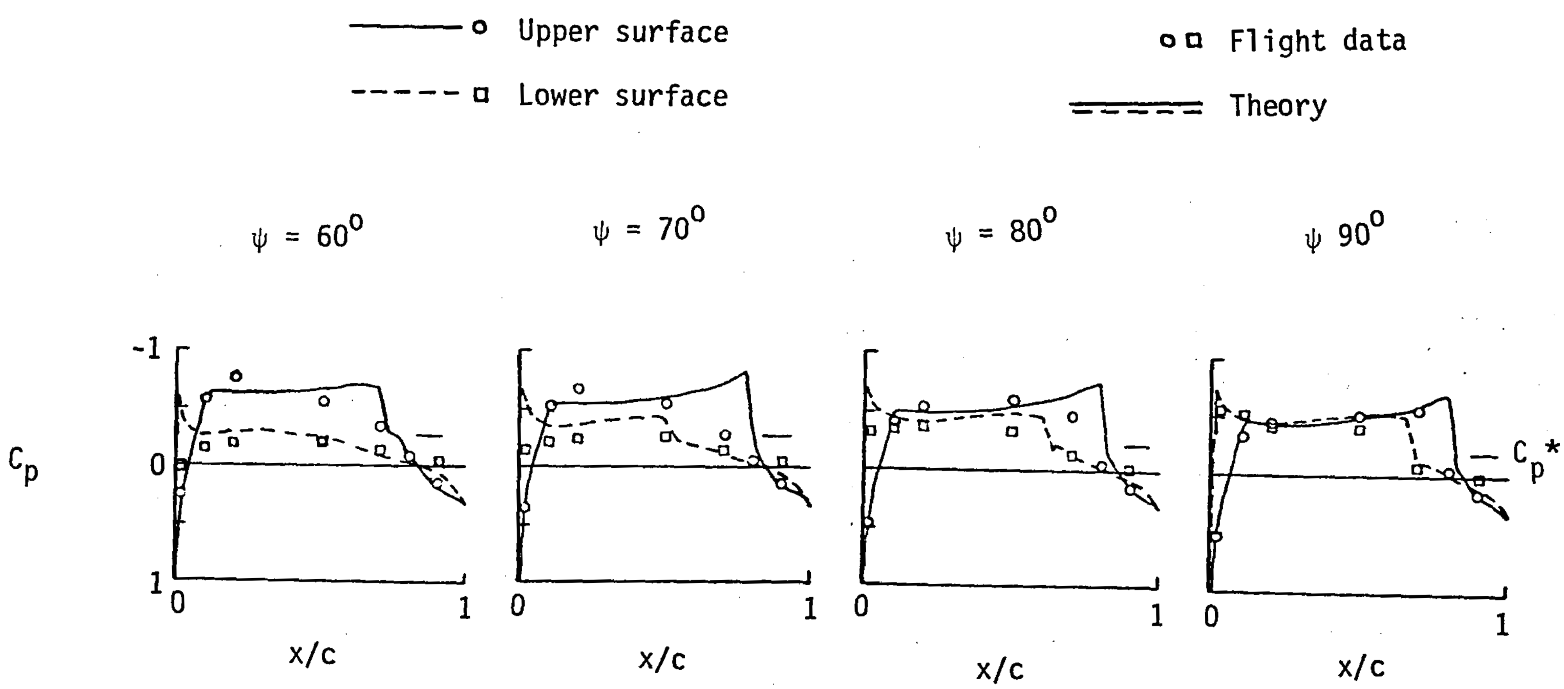



Figure 44.- Continued.

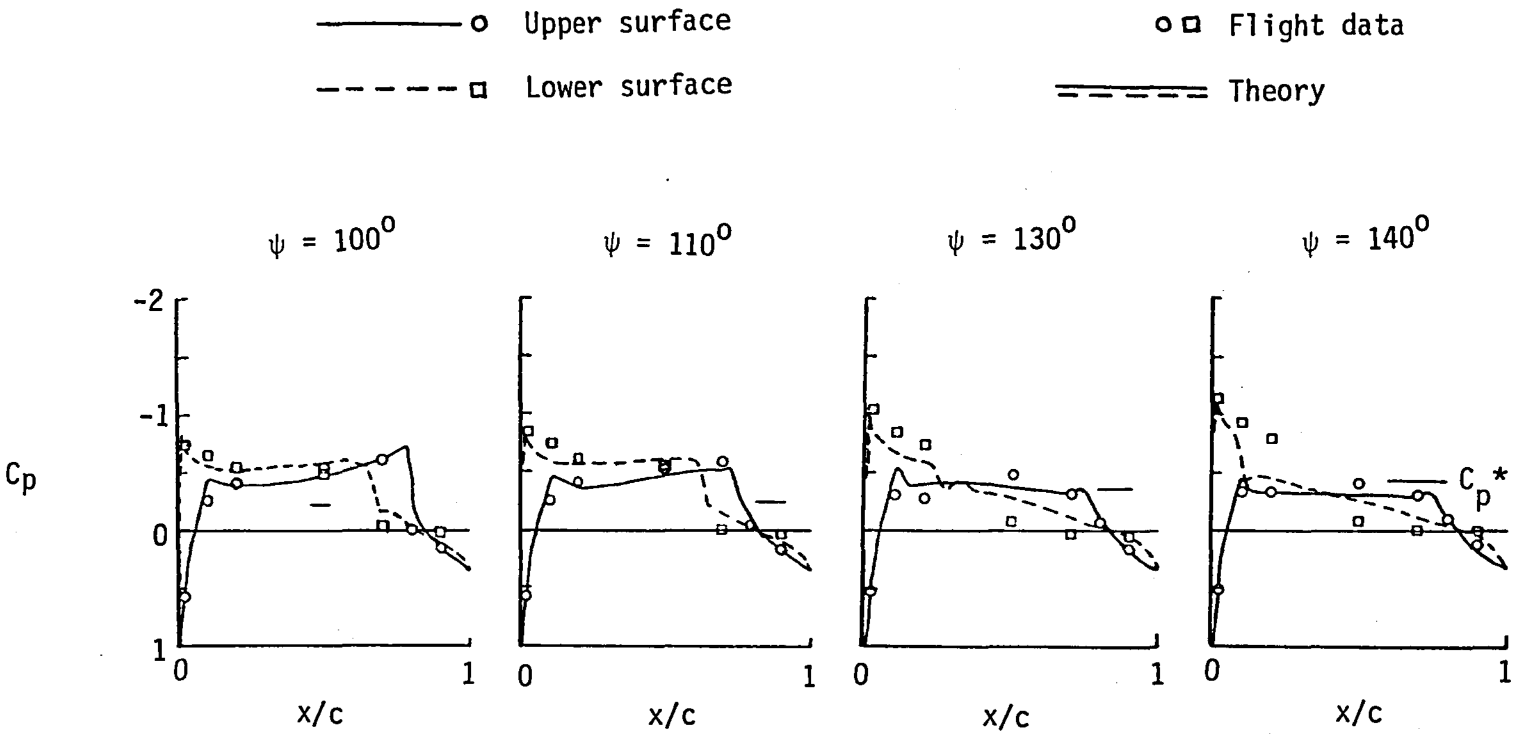



Figure 44.- Continued.

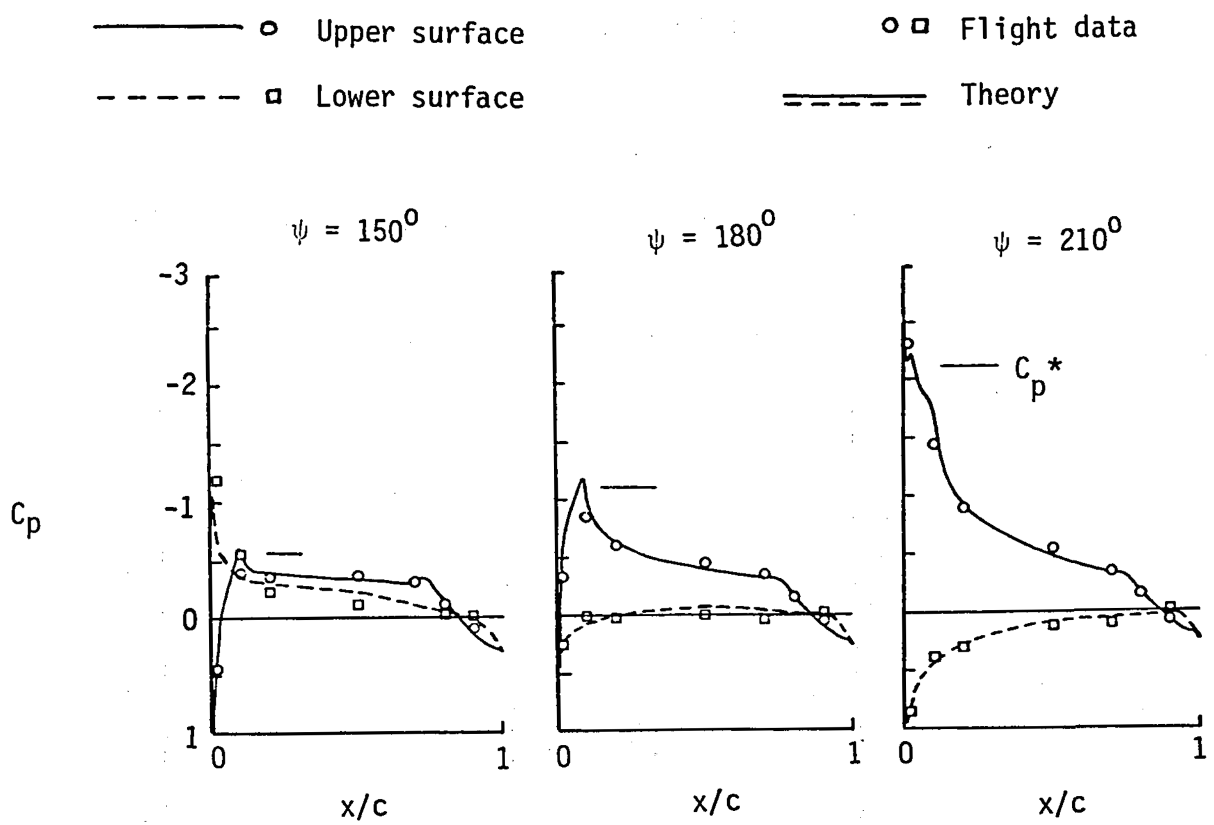



Figure 44.- Continued.

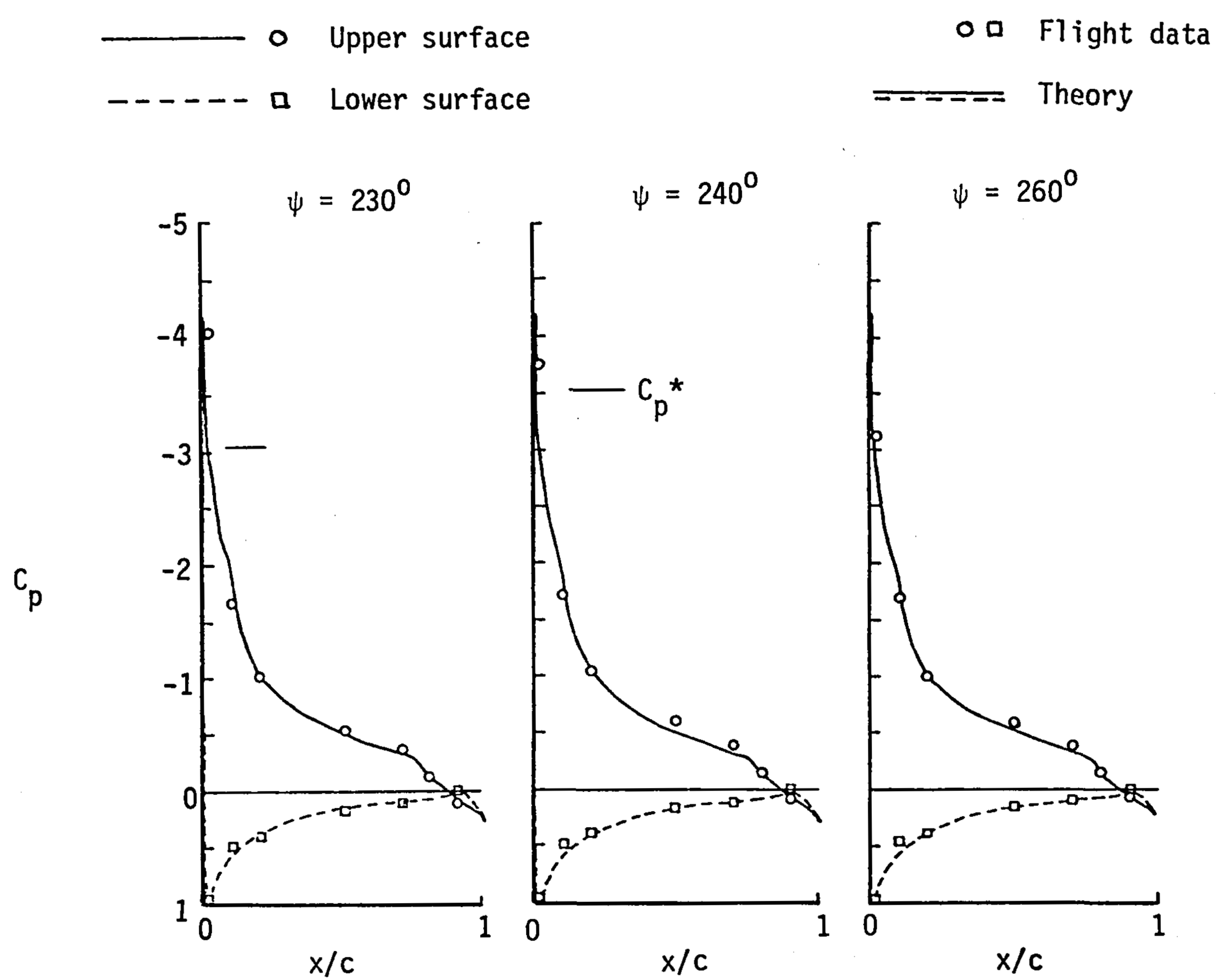



Figure 44.- Continued.

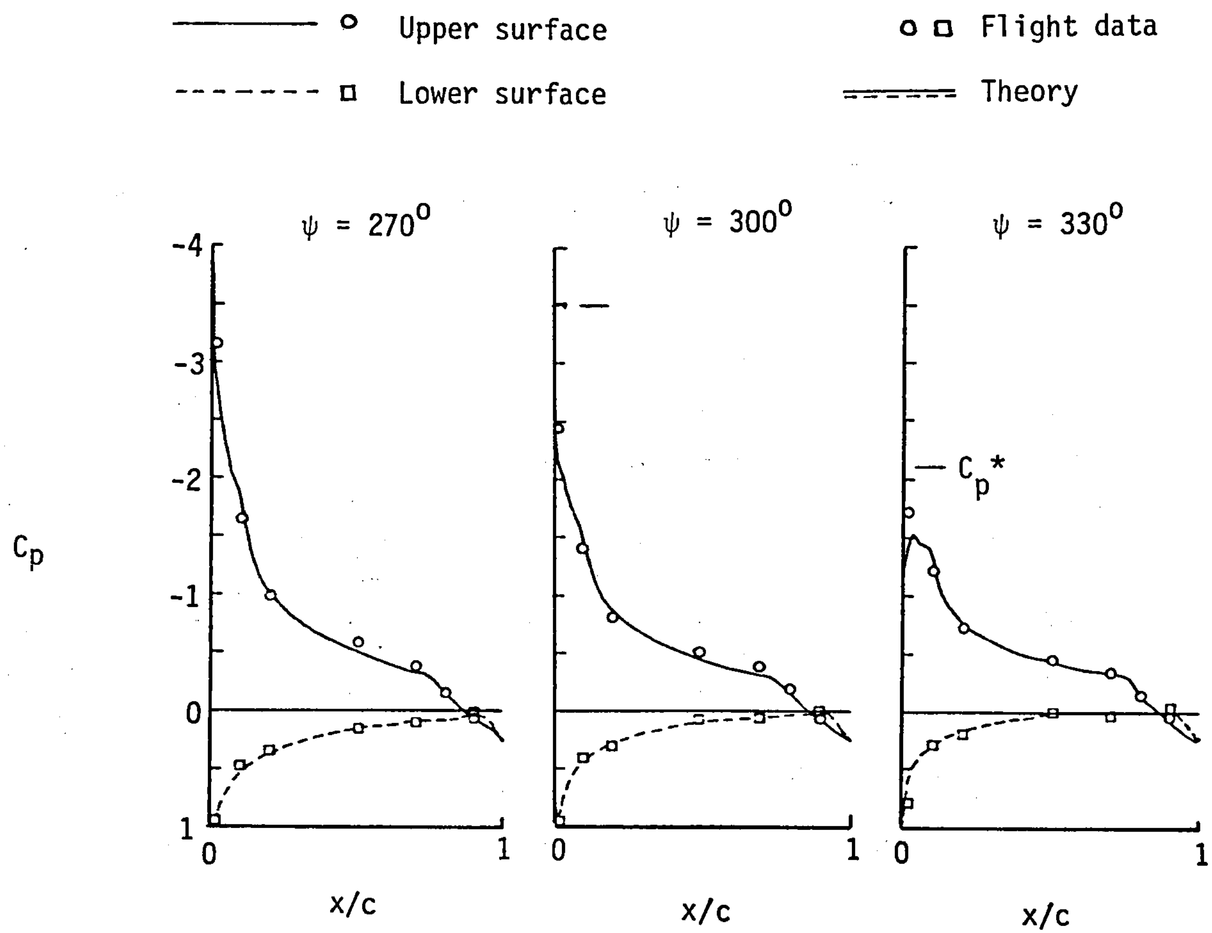



Figure 44.- Concluded.

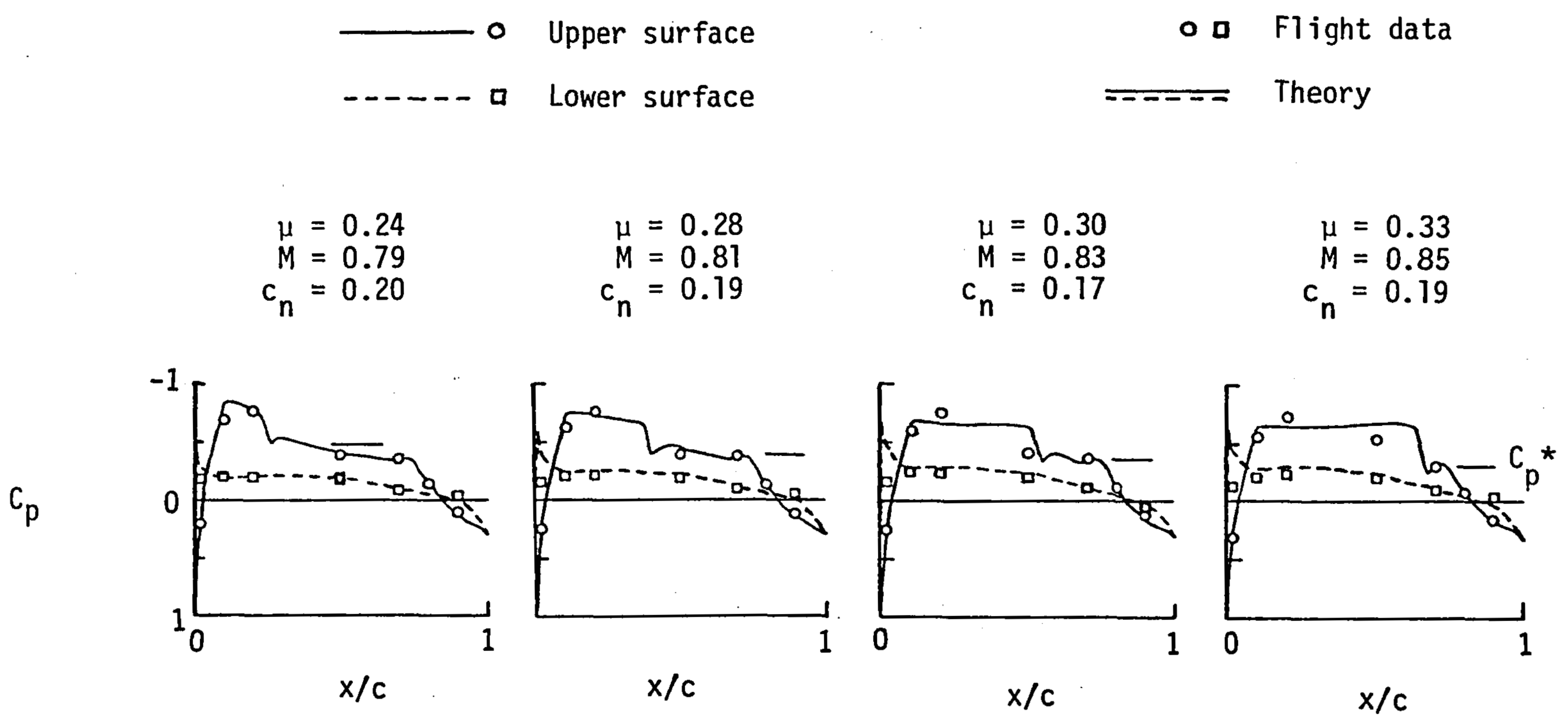



Figure 45.- Comparison of flight data and theoretical blade-section pressure distribution for $\psi = 70^{\circ}$; $r/R = 0.9$.

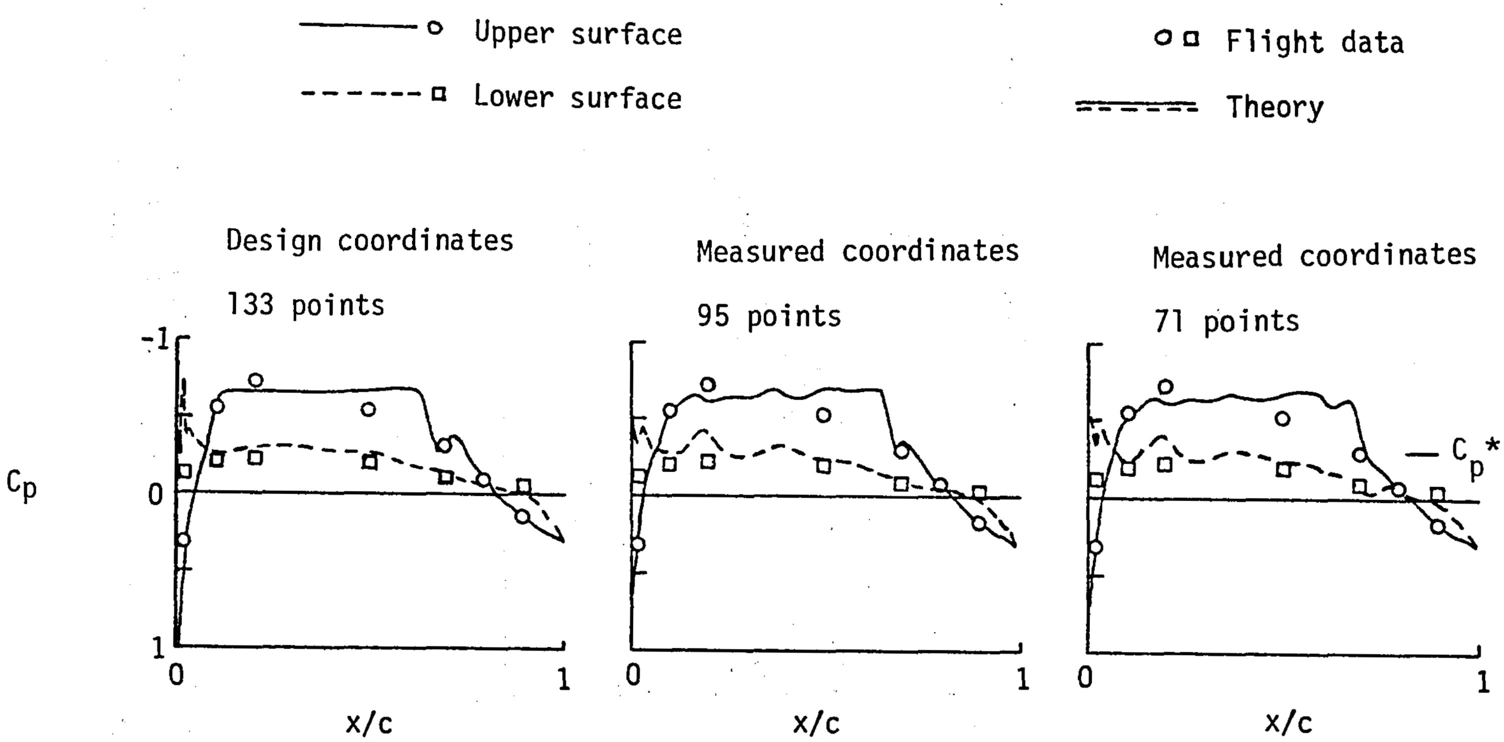



Figure 46.- Comparison of flight data and theoretical blade-section pressure distributions for several sets of airfoil coordinates. Flight 63, run 11 of Appendices D and E; $\psi = 70^{\circ}$, $M = 0.88$; $c_n = 0.19$; $r/R = 0.9$.

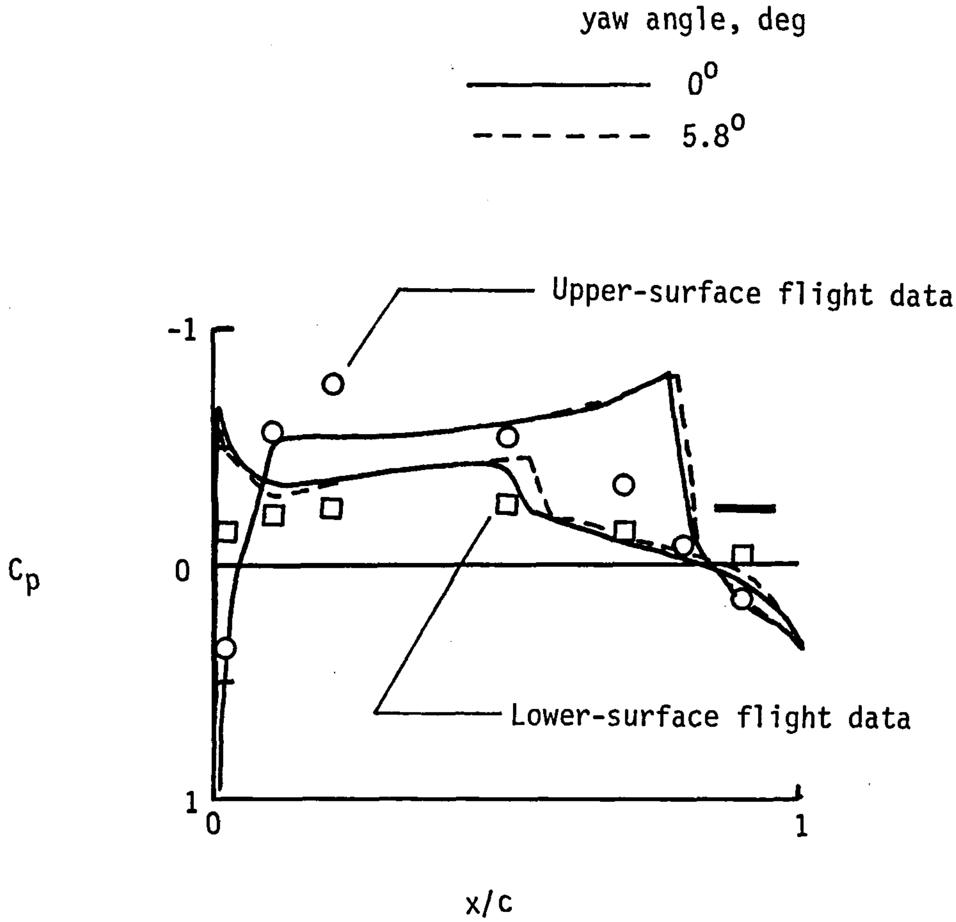



Figure 47.- Comparison of flight data and blade-section pressure distribution computed with and without Mach number and airfoil coordinate adjustment for yawed flow (ref. 35). $\psi$ = 70°; $\mu$ = 0.37; r/R = 0.9.

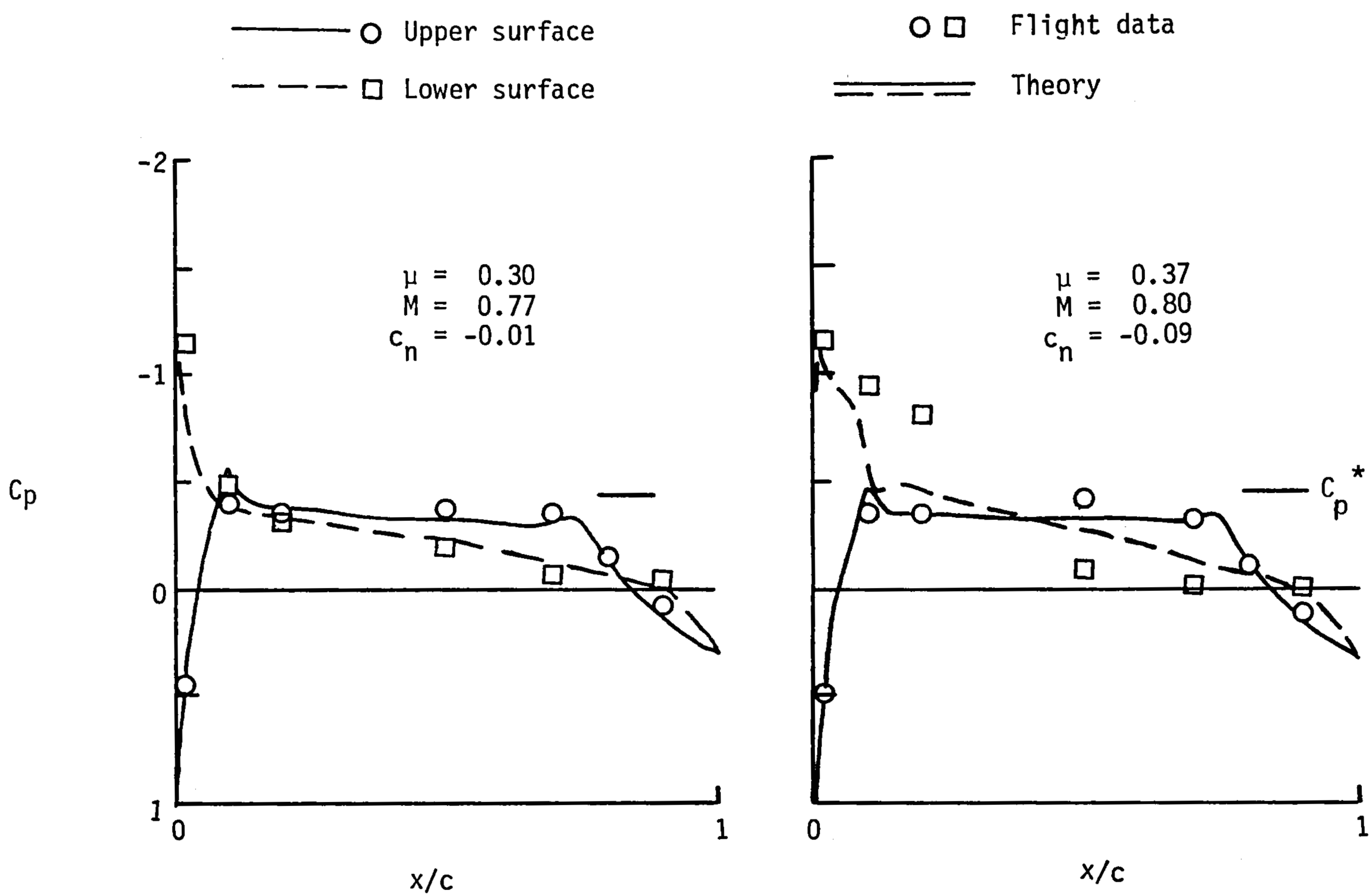



Figure 48.- Comparison of flight data and theoretical pressure distribution for $\psi = 140^{\circ}$; $r/R = 0.9$.

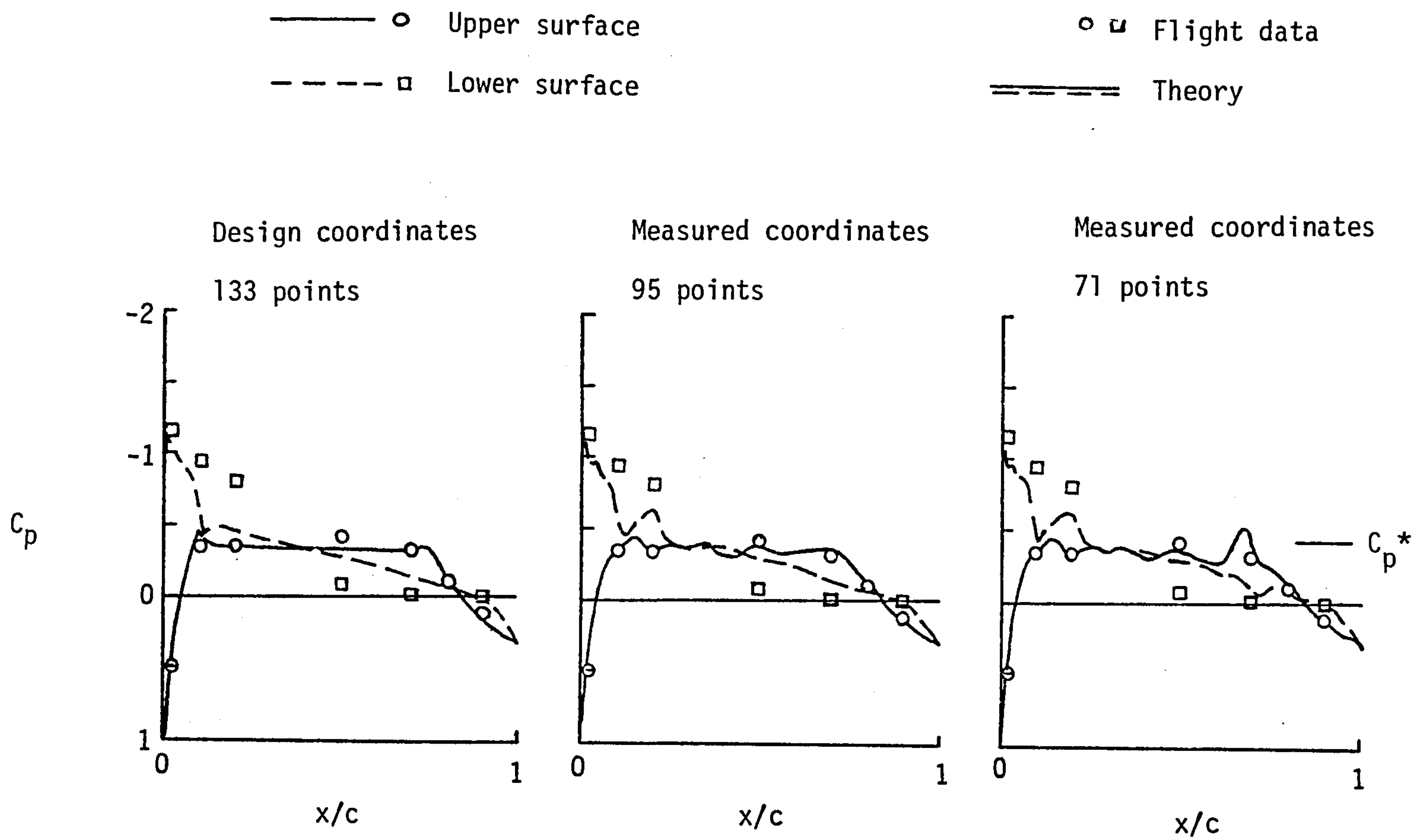



Figure 49.- Comparison of flight data and theoretical blade-section pressure distributions for several sets of airfoil coordinates. Flight 63, run 11 of Appendices D and E; $\psi = 140^\circ$; M = 0.80; $c_n$ = -0.09; r/R = 0.9.

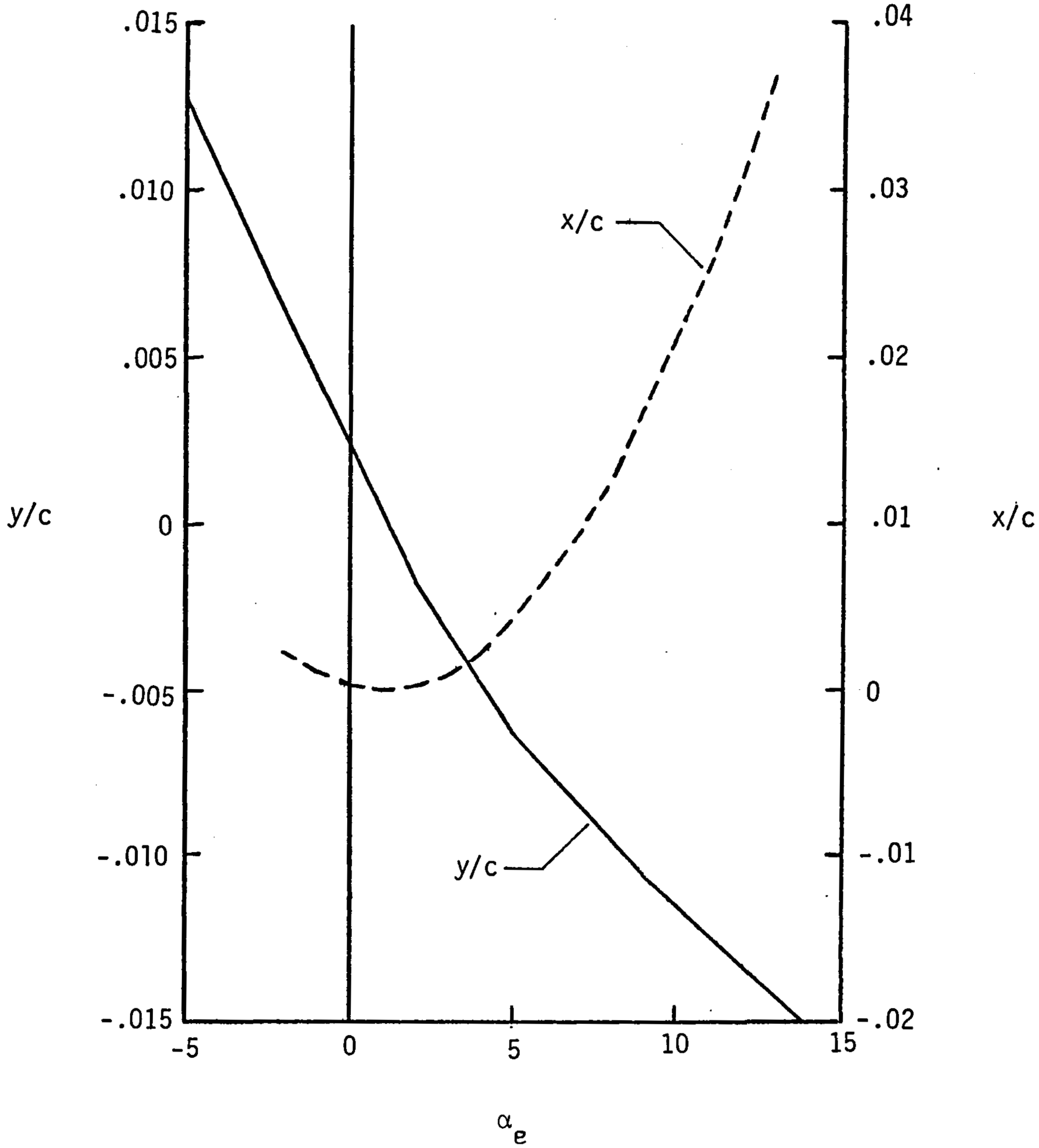
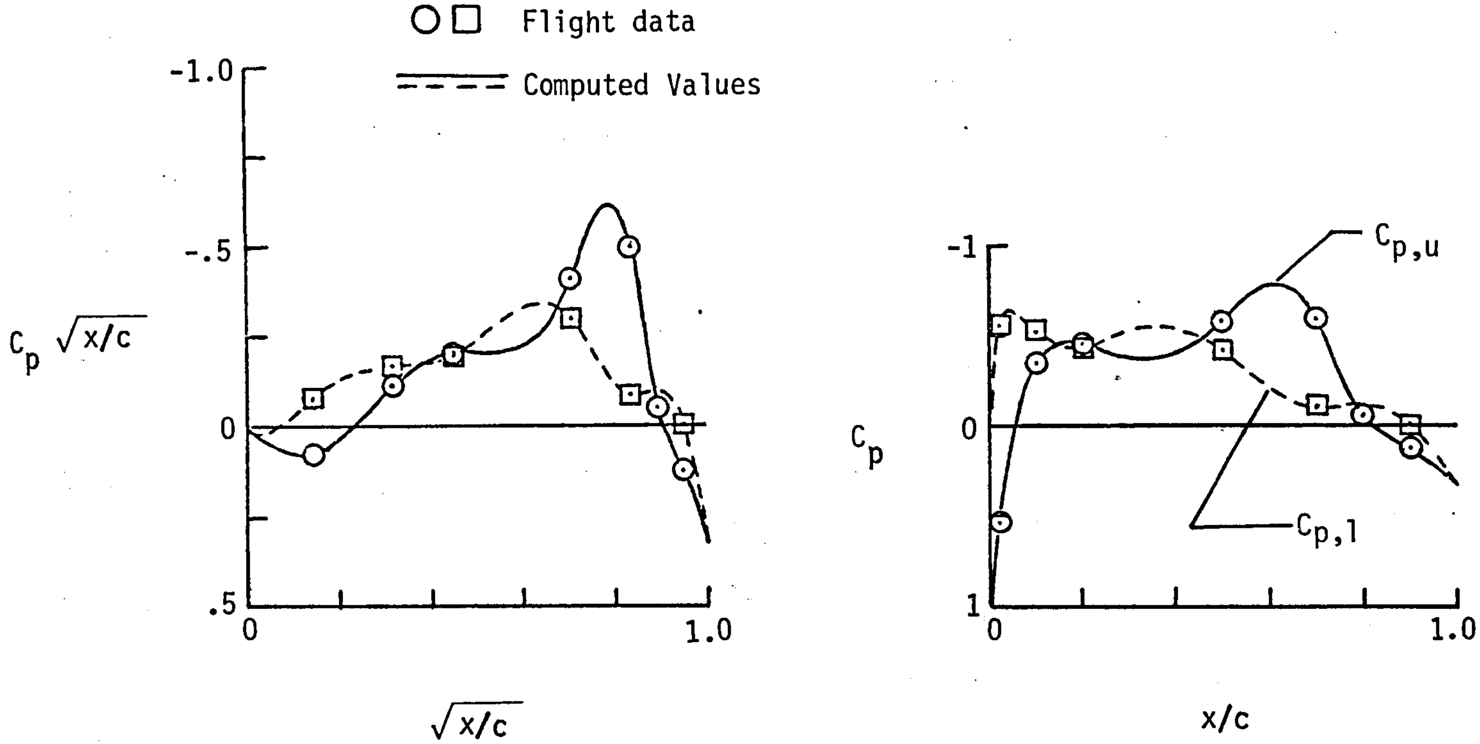
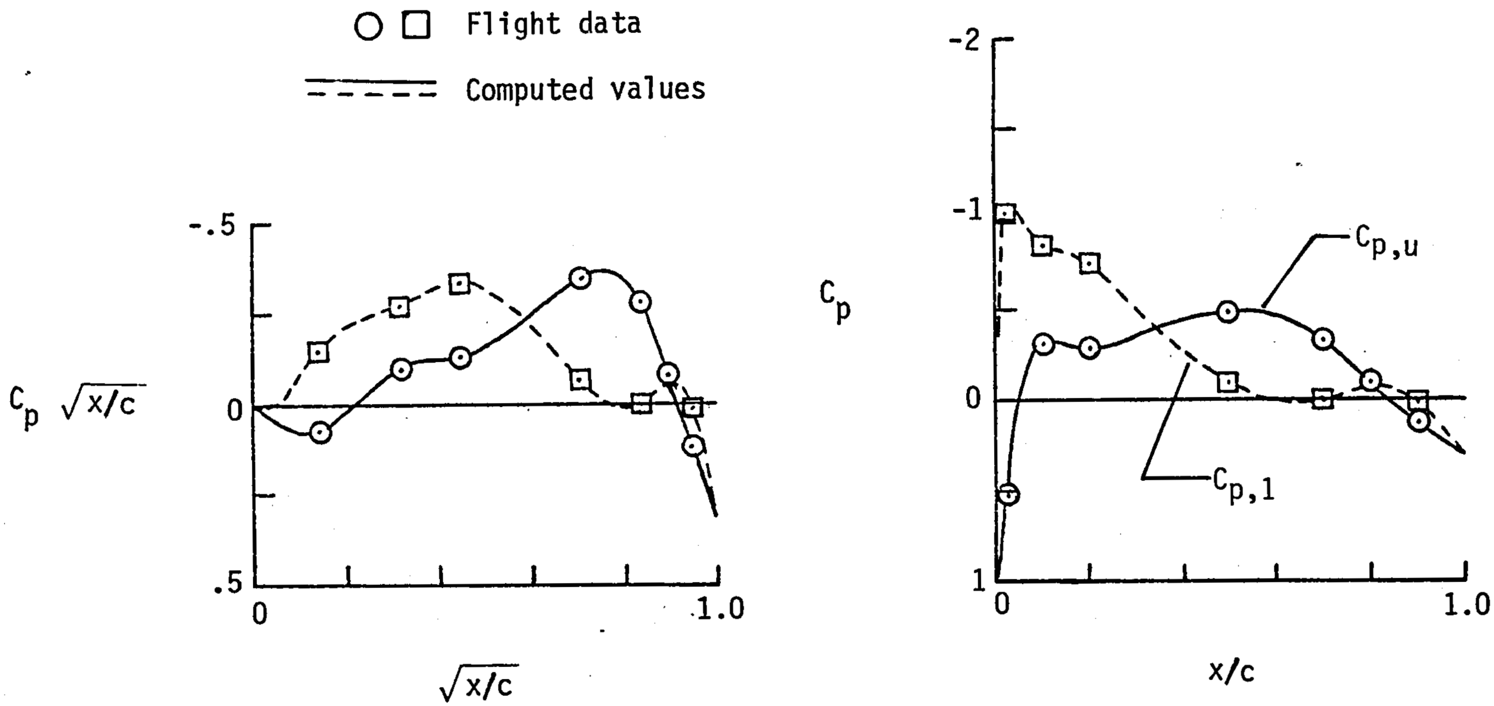



Figure 50.- Parameters for determination of stagnation-point locus as a function of effective angle of attack for the NLR-1T airfoil.



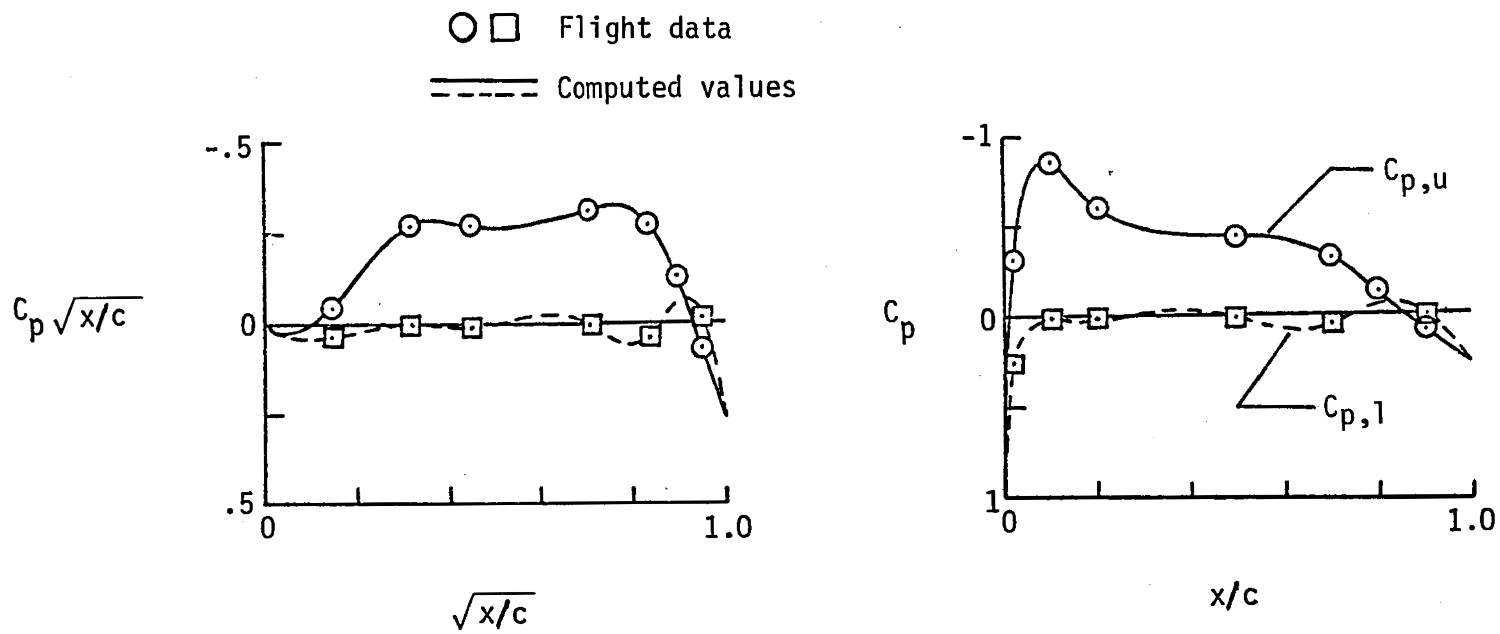

(a) $\psi = 90^0$; M = 0.89

Figure 51.- Results of curve-fit methods for flight pressure data. (Flight 63, run 11 of Appendices D and E.)



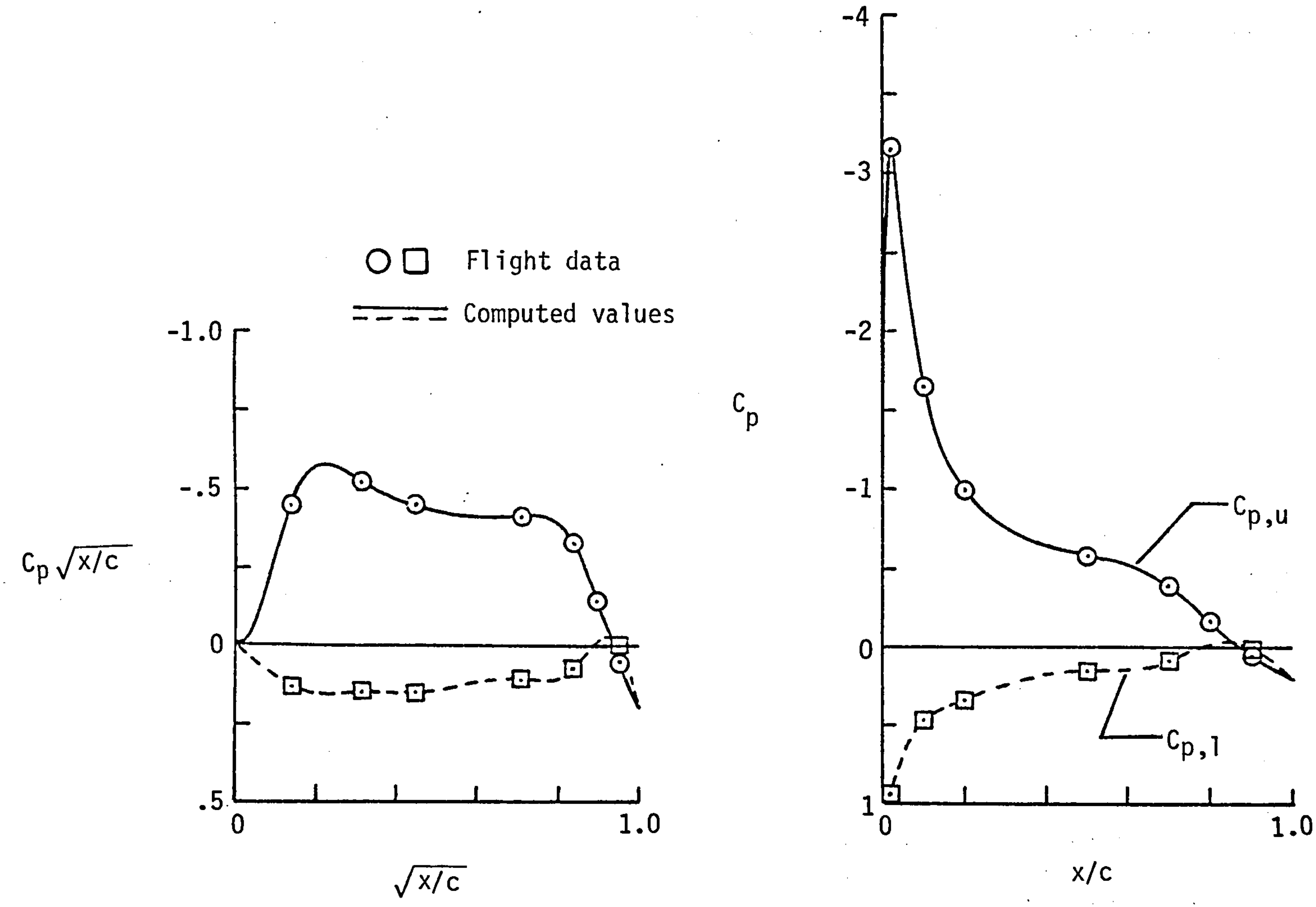

(b) $\psi = 130^{\circ}$; M = 0.83

Figure 51.- Continued.




(c) $\psi$ $180^{0}$; M = 0.63

Figure 51.- Continued.




(d) $\psi$ = 270°; M = 0.37

Figure 51.- Concluded.

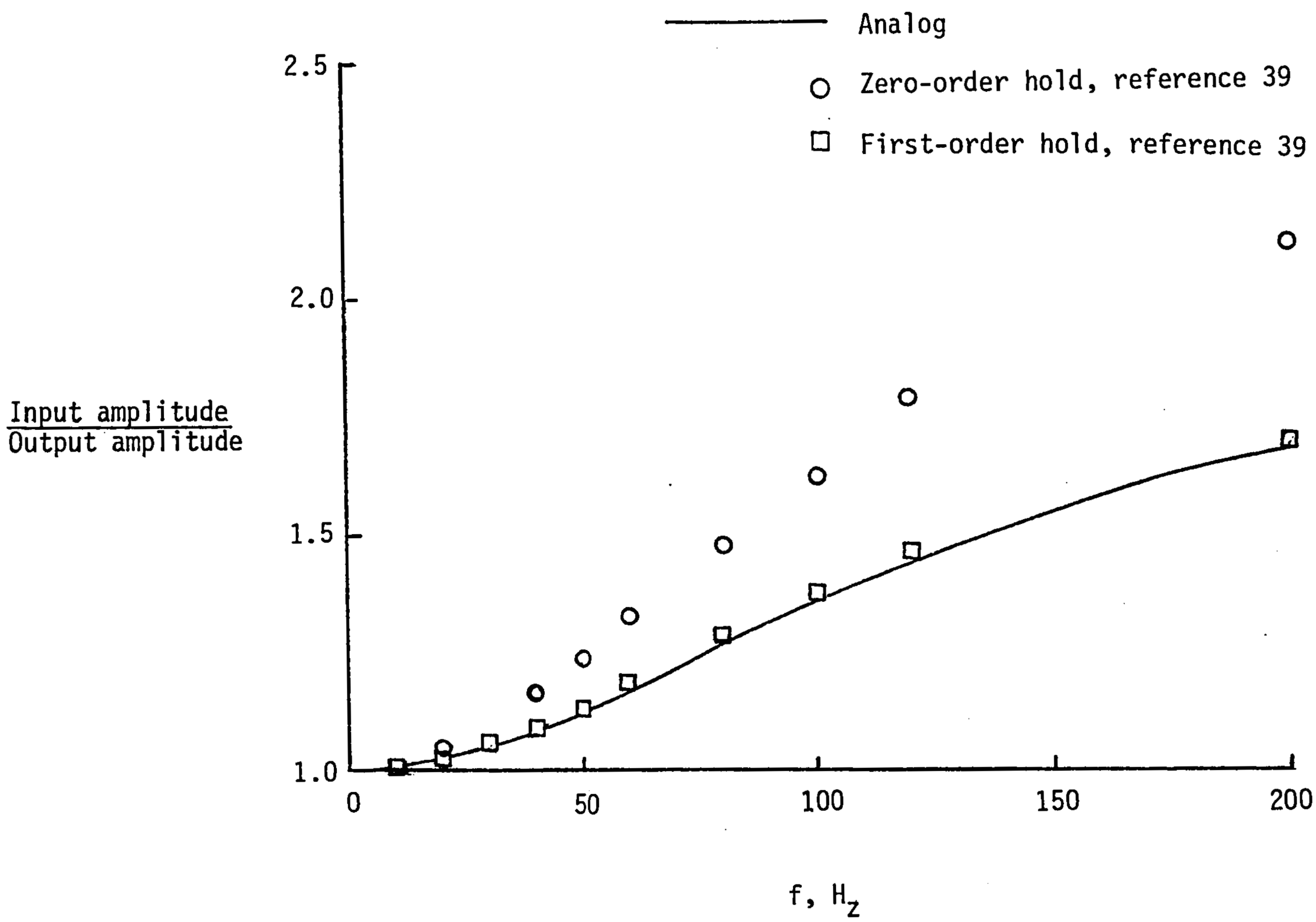



Figure 52.- Amplitude correction factors for electronics lag. Cutoff frequency, 80 $H_z$; gain factor, 2.0; 1000 sample/sec rate.

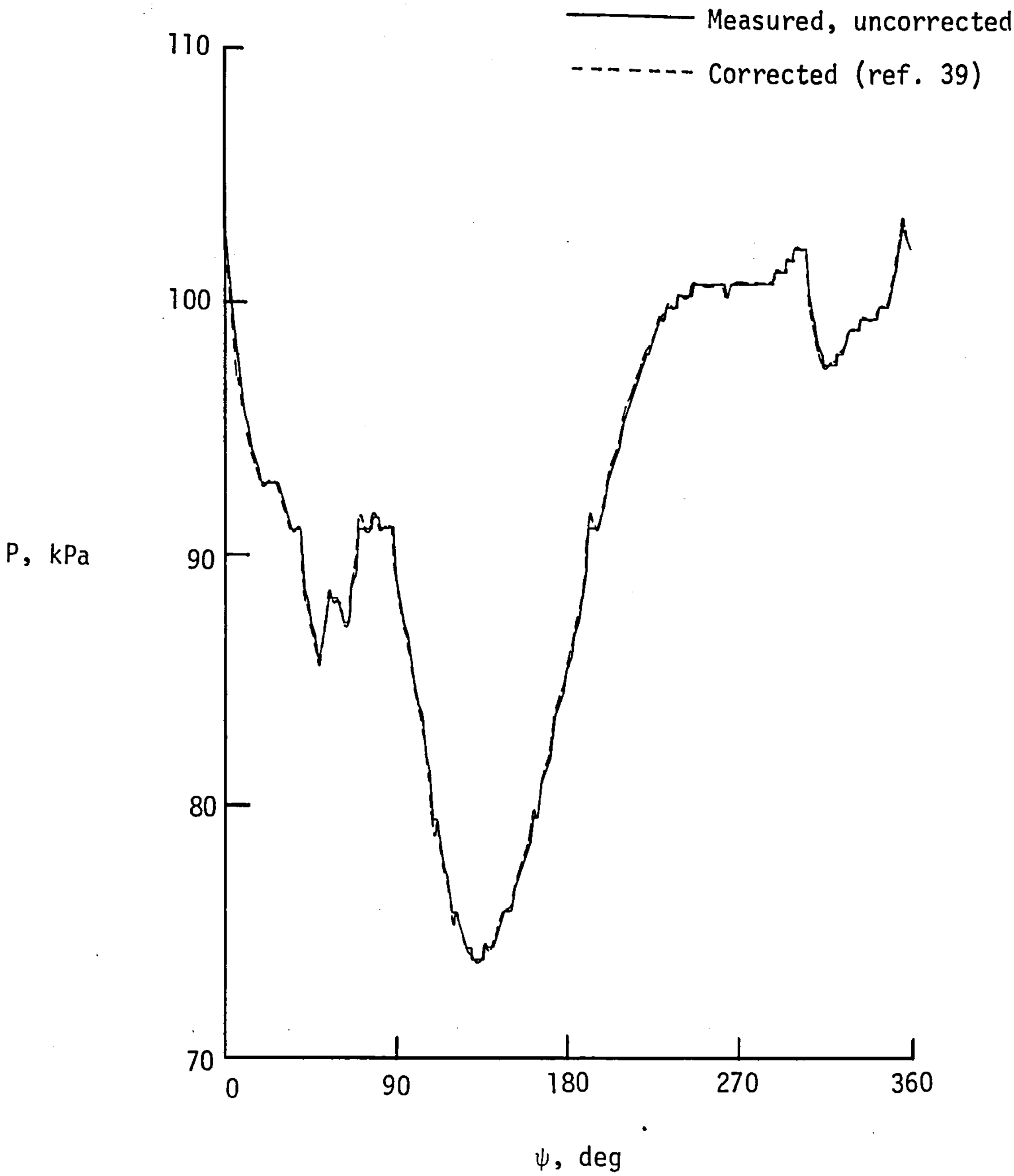



Figure 53.- Comparison of measured, corrected, and approximated pressure for a highly active pressure transducer.

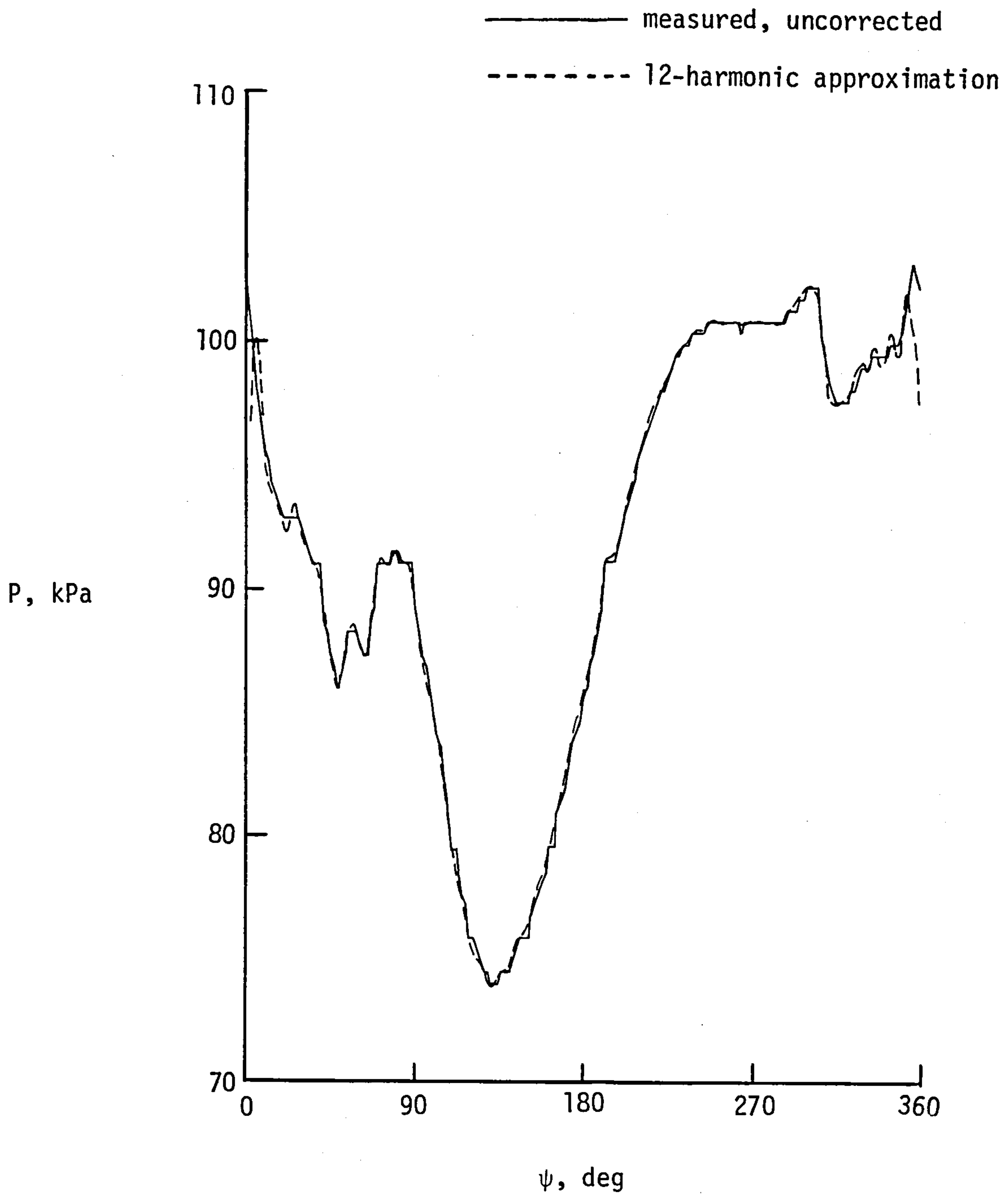



Figure 53.- Concluded.

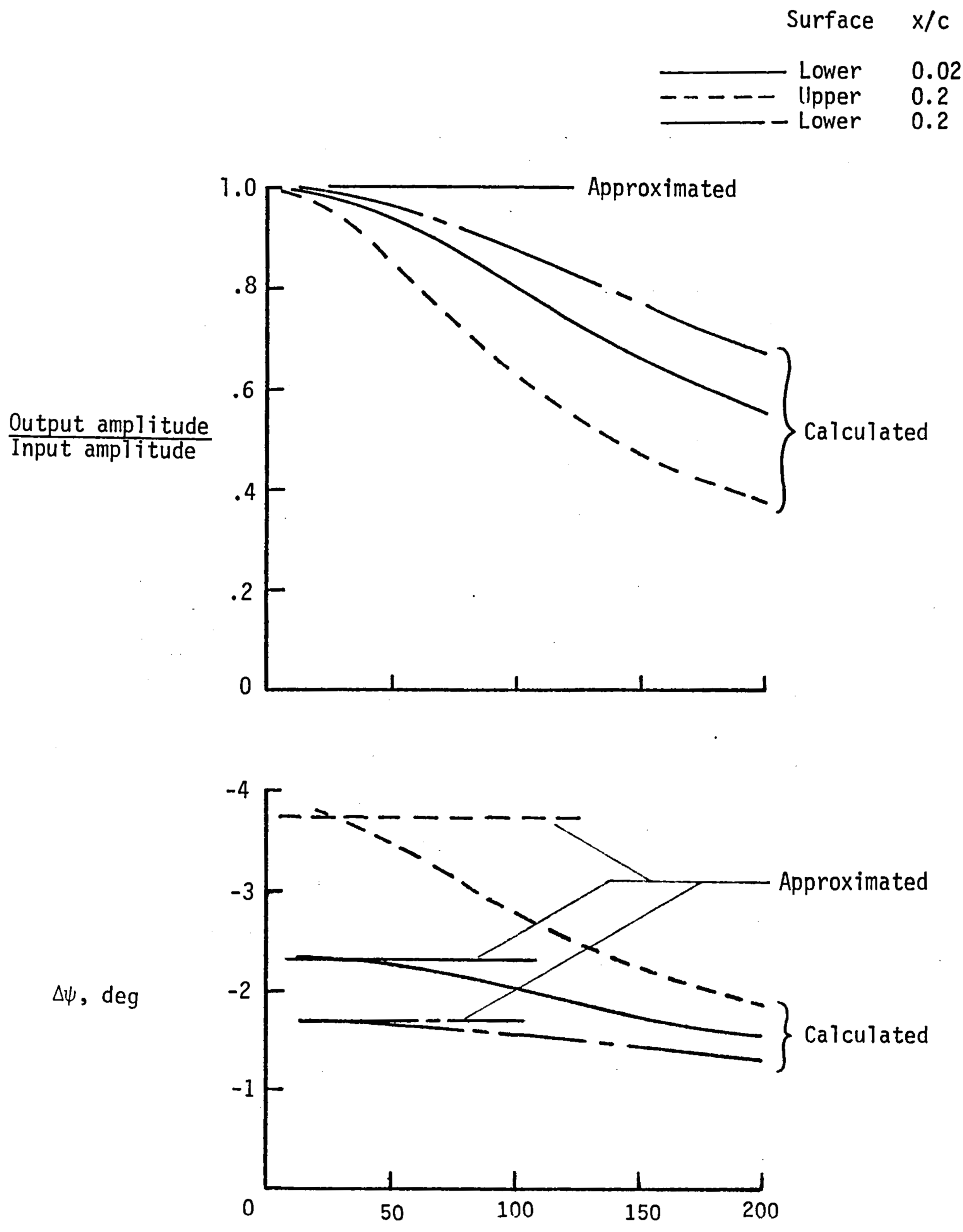



Figure 54.- Real and approximated dynamic-response characteristics for several pressure-transducer systems.

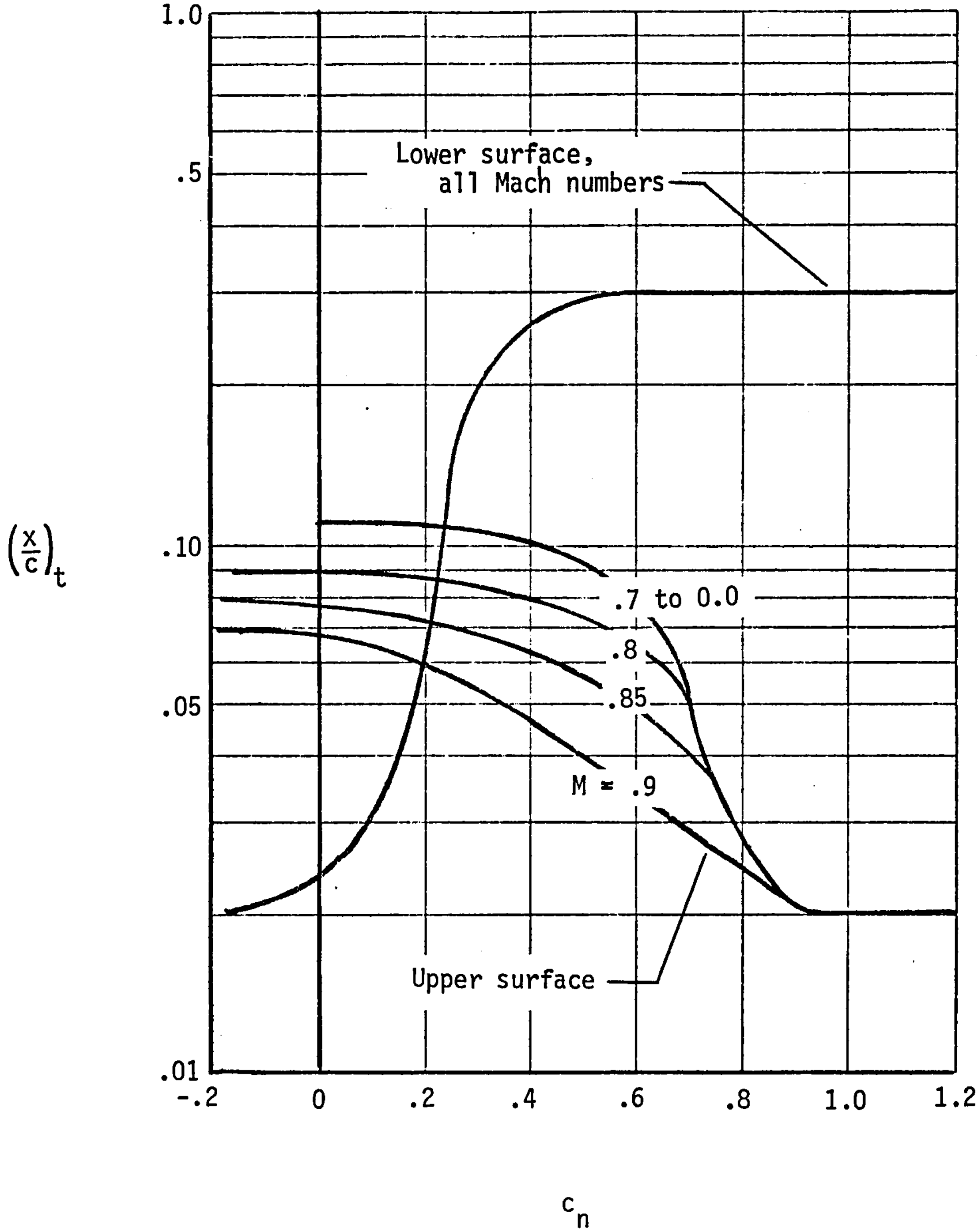



Figure 55.- Predicted blade-section boundary-layer transition for NLR-1T blades.

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15. Supplementary Notes

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Robert L. Tomaine: Structures Laboratory, AVRADCOM Research and Technology Laboratories

b. Major contributors to this research at LaRC, NASA, were Messrs. M. A. Basnett, M. T. Baxter, P. L. Deal, J. A. Fernandez, P. R. Pfeffer, and L. B. McHenry of FLTMD and Messrs. J. F. Bryant, J. O. Riggins, F. S. Vassey, and W. A. Walls of FED.


16. ABSTRACT

A flight investigation has been conducted using a teetering-rotor helicopter to obtain data on the aerodynamic behavior of main-rotor blades with the NLR-1T blade section. The data system recorded blade-section aerodynamic pressures at 90-percent rotor radius as well as vehicle flight state, performance, and loads. The test envelope included hover, forward flight, and collective-fixed maneuvers.

Data were obtained on apparent blade-vortex interactions, negative lift on the advancing blade in high-speed flight and wake interactions in hover. In many cases, good agreement was achieved between chordwise pressure distributions predicted by airfoil theory and flight data with no apparent indications of blade-vortex interactions.

This report presents detailed data for an advanced airfoil on an AH-1G helicopter; the data may be used for evaluating performance and airfoil analyses.


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